How Smart Do You Want to Be?

Always Online, Not Nearly as Innocent as It Seems

Sylvia Slegers

succesboeken.nl

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Innocent As It Seems

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With all respect, as a publishing house, we have taken the liberty to address you informally. This book is mostly written in the masculine form. That's how we're used to it and it feels the most familiar. That's the only reason.
We respect and admire every reader.
Some English words and expressions have deliberately not been translated; they are more powerful in English than in Dutch.

— The publisher

Which object …

– do you have in your hands first in the morning and last in the evening?
– do you always have with you indoors and outdoors?
– is an indispensable part of your daily life?
– demands your attention most often throughout the day?

There's a good chance the answer to these questions is: "my phone". And that's convenient, because that's what this book is about!

No happy message, but an important one. And moreover, one that concerns us all.

Not against, but for

Rest assured: this is not a plea against technological progress or a call to say goodbye to the use of smartphones and other wireless devices. It is written from the desire to sketch an overarching picture of the underexposed aspects of the wireless convenience that we all so eagerly use.

After all, if we are aware of both the pros and cons, we can make a well-considered and responsible choice and continue to enjoy it in a healthy, safe and sustainable way.

Everything that is addressed is supported by sources. You can find them at the back. Quotes from persons where no source is mentioned are (parts of) relevant answers to the many press questions that I have asked a large number of experts and organizations at home and abroad in my work as an investigative journalist.

Finally, a tip: be critical of everything you hear and read, ask questions and especially go investigate yourself.

Many questions

There are so many questions about the technology that we have in our hands for a large part of the day. We try to answer all those questions in this book. Questions like:

- What makes smartphones and social media so addictive?
- Why does pop singer Robbie Williams compare the internet to an addictive drug and does actor Hugh Grant call the tech sector a 'drug cartel'?
- Why is an ever-growing group of experts from different professional groups sounding the alarm about the consequences of screen use?
- Are there ways to deal smart(er) with our screens?
- What do we know about the risks of wireless?
- Can we get health complaints from it?
- What do doctors and scientists say about this?
- Why is this type of radiation sometimes mentioned in the same breath as smoking and asbestos?
- Why do insurers' policies explicitly exclude the risks of it?
- Why do telecom providers warn their shareholders about possible future damage claims and lawsuits?
- Are the exposure limits indeed as safe as the government claims?
- What can we do to protect ourselves and our children?
- Could it be that bees and trees are bothered by radiation?
- What do scientists and other experts say about this?
- And much more …

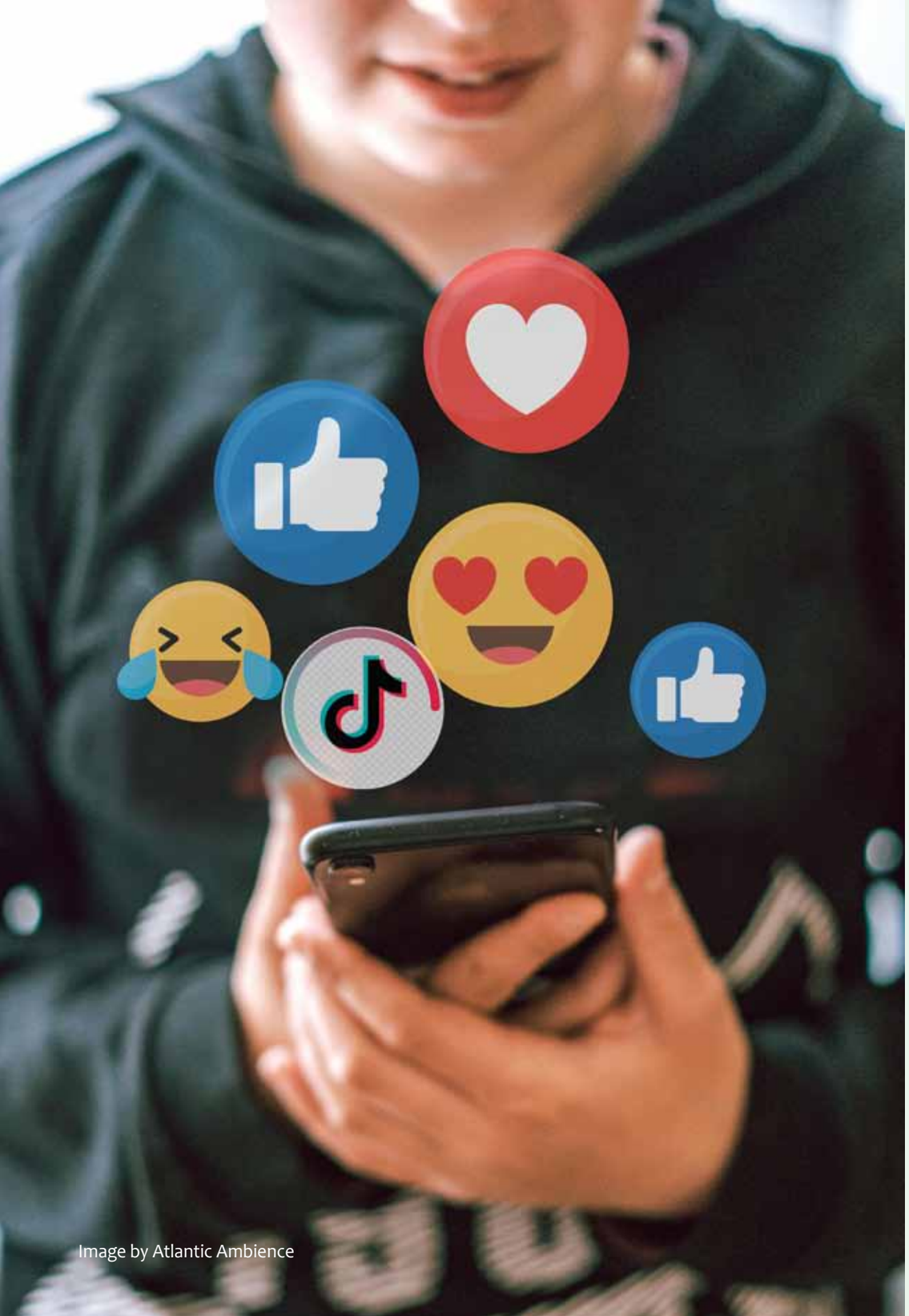


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Image by Susanne Edele

Endorsements

"If only I had known that earlier …"

This book is about an intruder that has stealthily attached itself to our lives: the smartphone. Sure, it's sometimes quite a handy thing. Yet, a growing group of people is concerned about the rise of these 'smart' devices. The dangers of frequent smartphone use are not insignificant.

First, they are enormously addictive, especially through cleverly made 'apps'. Addiction works by stimulating the dopamine system in the brain, as thoroughly explained in this book. But there is a second and de facto even greater danger: the electromagnetic radiation with which wireless communication works.

Sylvia Slegers sketches a shocking picture of how governments and telecom companies manage to downplay the potential dangers of 'wireless'. Yet there are thousands of independent scientific quality studies that have irrefutably demonstrated the risks of electro-radiation for humans, animals and nature.

The great value of this book is that it provides a fine summary of those studies and their results. For those who do not yet know the dangers of the smartphone, this book is a nice opportunity to gain some 'smartness'! Then at least you can't say: 'If only I had known that earlier' …

— Dr. ir. Inge-Willem Noordergraaf
Senior Research Scientist at the University of Groningen
and member of the Scientific Platform Electromagnetic
Fields (EMF) Netherlands

"Booming mobile industry endangers health"

The radiation from mobile phones, transmission towers and other wireless communication means escapes our perception: we don't hear it, don't see it and don't feel it. This radiation is increasing strongly and governments are not planning to do anything about it for the time being. They hide behind incomplete safety standards.

As long as, under the influence of a booming mobile industry and a control-eager government, nothing is legally undertaken against the possible risks of this electrosmog, it is up to the citizen themselves to delve into it and take protective measures. How? For example, by reading this book, with the well-chosen title *How Smart Do You Want to Be?*

— Dr. Maarten Fornerod
Biomedical researcher and publicist

"A book that touches, shakes awake and offers perspective"

Since I met Sylvia Slegers in 2020, I have been impressed by her sharp mind and her tireless commitment to a safe and livable electroclimate. An inspiring collaboration immediately arose.

For example, we published, as co-authors with about thirty scientists and (experience) experts from the Scientific Platform Electromagnetic Fields (EMF) Netherlands, the book *Radiation Viewed from All Sides*, to provide insight into the way in which artificial radiation has an impact on people, animals and plants.

In it, Sylvia wrote the poignant contribution *Lifelong in a Smart Lockdown*. Her tone went straight to the heart. I spoke at the time to someone who told me after reading that book: "... through all the facts in that book I have come to understand the dangers of 5G much more, but Sylvia showed me what that means."

In her latest book *How Smart Do You Want to Be?* she once again

lets her valuable voice be heard in the public debate about the impact of technology and radiation. Sylvia is no tech hater – on the contrary. She understands that mobiles and wifi have great added value in our lives. But she also shows what goes wrong and describes the creeping effects of always being online – on our bodies, on our thinking, on our living together and on our children.

What makes her work so special is that it is imbued with vision and integrity and the courage to say what needs to be said. She does not get bogged down in dry facts or abstract analyses. Nor does she base herself on her opinion.

I have great respect for her ability to write with compassion and conviction and to connect supporting information with human experiences in a meaningful way.

This book makes you think; it makes the reader feel how our 'smart' world can sometimes turn out very stupid and why it is time to reconsider our course. Because of the urgent content, it is a must-read for anyone who dares to question the apparent obviousness of digital progress.

— Sander Funneman
Author of, among others, *Electric Ecosystem* and *Electric Life*

"A treasure of balanced and relevant information"

Until about five years ago, I believed that wireless radiation, such as that from mobile phones, was relatively harmless. That may sound surprising, since I was chairman of the department of Electrical Engineering and Computer Sciences at the university of New Hampshire and have dedicated my career to studying electromagnetic fields.

My assumption at the time was shaped by reassuring articles in professional journals, which conveyed the same message as the tobacco industry once used to downplay the health risks of smoking.

My perspective changed drastically when I sat on a government commission tasked with investigating the health and environmental

effects of wireless radiation.

Legislators received complaints from citizens who felt harmed by wireless technologies, while the telecom sector insisted that the radiation was completely safe. To resolve this contradiction, the commission was established, consisting of independent experts with sufficient scientific background to assess the evidence.

I was invited to participate because of my expertise in radio frequency and biomedical technology. After more than a year of thorough research, the commission came to a clear conclusion: wireless radiation is harmful and protective measures are urgently needed, especially for children.

The bad news is that the risks are real. The good news is that we can take practical measures to reduce our exposure. Most of us are not willing to give up the convenience of our mobile phones after all.

How Smart Do You Want to Be? offers a powerful and accessible overview of these risks. Sylvia Slegers not only examines the dangers of exposure to radiation, but also emphasizes the physical toll that the use of wireless devices entails. She also discusses the addictive nature of smartphones and their impact on mental health.

To face the challenges of our electronic devices, we must first acknowledge and understand them. Reading this book is an excellent way to start with that.

— Dr. Kent Chamberlin
Emeritus professor and chairman of the department
of Electrical Engineering and Computer Sciences
at the University of New Hampshire, America

FOREWORD

by Drs. David Gee

"Engaging stories and thorough research"

In a world where technology is developing at a rapid pace, it is crucial that we pause for a moment to consider the consequences of our ever greater dependence on digital devices.

Sylvia Slegers has thoroughly delved into the risks of screen use and the radiation from mobile phones, their telecommunication towers, computers and other wireless devices over the past decades. The book *How Smart Do You Want to Be?* is the result of her reflections on the core of the digital revolution.

Sylvia urges us to think about the physical, mental, psychological and social consequences of always being online. With challenging questions and insights, she provokes us to reconsider our relationship with these wireless technologies and to ask ourselves if we really have control over our digital lives.

Part I of the book explores the impact that 'smart' technologies have on our daily lives and offers plenty of food for thought. Both about the time we spend behind screens and about the health warnings from many experts (including physiotherapists, neurosurgeons, psychiatrists and psychologists, youth and eye doctors, educational staff, family and relationship therapists and child coaches) who point to the physical, mental, psychic and social consequences of frequent screen use.

Part II focuses on the possible health risks of the radiation that wireless technologies emit. It raises important questions about the inadequate exposure limits set by governments based only on short-term effects of heating and which offer no protection to vulnerable

subgroups such as fetuses, children, pregnant women and people with a weakened immune system, and which do not take into account environmental effects.

Governments have largely accepted the safety recommendations of the International Commission on Non Ionising Radiation Protection (ICNIRP – an international organization with close ties to the telecommunications industry). However, the Court of Appeal of Turin noted in 2020 that 'scientists funded by the telephone industry, or members of the ICNIRP, are less reliable than independent scientists'.

The plaintiff – an employee with a brain tumor presumably caused by the radiation from his mobile phone – was awarded compensation. It is no wonder that the global insurance sector generally does not insure telecommunications companies against the adverse effects of their technologies.

Part III is about the effects of artificial electromagnetic fields on bees, trees and biodiversity. As we witness a decline in insect populations and other environmental changes, Sylvia summarizes the evidence showing that exposure to electromagnetic fields likely contributes to this decline.

Through engaging stories and thorough research, Sylvia offers a comprehensive guide to navigating the complexity of our digital age. May these insights inspire us to use our screens more wisely, to prioritize our well-being and to protect the world around us.

— Drs. David Gee
Former senior advisor Science, Policy and Emerging Issues at the European Environment Agency in Copenhagen and co-author of *Late Lessons from Early Warnings: the Precautionary Principle 1898-2000 and Late Lessons from Early Warnings: Science, Precaution, Innovation*

FOREWORD

by Drs. Ruud Swagemakers

"More and more patients with a wide range of complaints"

I can still remember my grandpa well, with yellowish fingers and teeth, who had been smoking his whole life. Every year I helped my grandma with water with a good dash of chlorine to remove the deposit of the cigarette smoke from the ceiling in the living room. No argument could convince my grandpa to stop: "I've been smoking all my life and have almost no complaints." As a child I could hardly understand that my grandpa didn't just stop smoking because it was so bad for his health. So I and my family 'enjoyed' smoking along during the Sunday afternoon visits.

An addiction creeps in stealthily and before we realize it, we ourselves have become addicted: to the dopamine stimulus of the attention-demanding apps, social media and screens. Nowadays, almost all users of mobile telephony and screens are addicted to this technology.

We can and want no more without it, argues Sylvia Slegers in her book *How Smart Do You Want to Be?* The book is full of uncomfortable messages that you actually don't want to hear. Sylvia lets all arguments and all health risks for people, animals and plants pass in review and sketches how the government and telecom industry ignore, deny and twist all these objections.

The radiation exposure has increased by a factor of a billion (1,000,000,000) in the past ten years. The firm handshake of my grandpa, who was a bricklayer, I could endure, but a vise with a billion times stronger force ... Can we as humans co-evolve with this increased radiation exposure?

So far apparently yes, with all the collateral damage around us,

which we often don't want to see or don't realize. But in the near future? Can humans adapt at the same speed as the technology develops? How long do we want to take all this collateral damage for granted: the explosion of cancer, the increase in stillborn babies, etc.

In 2018, emeritus professor in Biochemistry and Basic Medical Sciences Martin Pall said: "Placing millions of 5G antennas without a single biological safety test must be the stupidest idea anyone has ever had."

In short, as a doctor and as a human, I am very seriously concerned. We can't manage anymore with a bucket of chlorine water. For ten years I have been seeing more and more patients, with a wide range of complaints, who have good reasons to assume that they are related to exposure to electromagnetic fields.

Did you know that in the Soviet era the State Duma decided to ban the microwave, after thorough research into the harmful health aspects of it? Since 2013, the NIX18 law applies: no drinking and no smoking until eighteen. Do governments also have the awareness to ban or at least limit wireless technologies because they are so destructive to all life on earth?

Are they willing to enact a law that prohibits the use of smartphones, tablets and smartwatches by children under 16?

Smart enough, Sylvia also offers the reader of this book a number of tips and solutions. Before you close the book, because it takes you too far out of your comfort zone, read in chapters 3 and 9 tips that can help you a bit on your way to curb your addiction and

deal responsibly with your phone.

In addition, there is an extensive bibliography with many books by (experience) experts. A precautionary policy and the best possible minimization of radiation are urgently needed. What that can look like in practice is described in Appendix 3: T*ransmitter Radiation and Desired Policy – how can the government make our mobile communication healthier?* Read under point 2 *Infrastructure and standards*, point 2d about an alternative to wifi: Light Fidelity (LiFi).

I wish the reader, and especially parents of young children and future parents, clarity and increasing awareness in their brains clouded by electromagnetic fields and love and strength to make different choices than the telecom industry has made for us so far. The book *How Smart Do You Want to Be?* can help you on your way in this.

— Ruud Swagemakers
Doctor for homeopathy and integrative medicine



INTRODUCTION

Fast, faster, fastest …

It has been quite a while since the first generation of the mobile network (1G) was launched: Car telephony (ATF) with which in 1980 only calls could be made.

Eleven years later, 2G (GSM – Global System for Mobile Communications) entered. With that we could call and send short text messages. In 2001 we were delighted with 3G (UMTS - Universal Mobile Telecommunications System). Since then we could also surf the internet via our phone. If we could muster the patience, we could download videos in an hour. Another ten years later came 4G (LTE – Long Term Evolution) and downloading videos only took one minute.

With the arrival of 5G (NR – New Radio), which we have been able to use since 2020, downloading a video takes less than a second. This wireless generation has unleashed a true revolution of which the end – also for the tech sector itself – is still far from in sight.

Smart, smarter, smartest?!

There are more mobile phones in the Netherlands than inhabitants, worldwide almost twice as many. Especially the arrival of the smartphone has unleashed a true revolution. Something completely obvious like mobile video calling was around the millennium change still very special. Also for all kinds of household and caring tasks, ‘smart’ alternatives are now available.

Even for the control of our health, for maintenance and energy management. A ‘smart’ house is full of ‘smart’ devices. ‘Smart’ and ‘smart’ are the fashion. You join in, right?!

The rollout of the 5G network is also presented jubilantly: 5G is even faster and can send much more data. Moreover, with 5G complicated processes can be automated and remotely controlled. And what about self-driving cars and operations at a distance?

Proponents say: “Smart, life will become more efficient, easier and also more fun.” But is that really so?

Every advantage …

Because we are always reachable, work pressure increases. Our social interpersonal and physical contacts slowly but surely shift to the background and the interaction with our children becomes clouded. We are exposed to an overdose of digital information and our mental health suffers from the social pressure of ‘fear of missing out’ (FOMO). This not infrequently leads to addiction.

Children can concentrate less easily, sit inside more and exercise less. Problematic smartphone use can be associated with a multitude of physical, mental, psychic and social consequences in children and adolescents.

In addition, the health risks of wireless radiation and the effects that this radiation has on flora and fauna are an increasing source of concern.

PART I

Everyone smart?



Image by Mircea Iancu

INTRODUCTION PART I

It will not have escaped anyone's notice: we are in the midst of a digital revolution. The 'smart' developments are following each other at a breakneck pace. The possibilities are endless and even *the sky* is no longer *the limit*.

Our attention nowadays is focused a large part of the day on our smartphones and tablets and our online life is sometimes perhaps even more engaging than the 'real' one. But do we still have control in our own hands?

Do we have sufficient attention for the physical, mental, psychological and social consequences that are beginning to emerge more sharply? Why is an ever-growing group of experts from different professional groups (scientists, physiotherapists, neurosurgeons, psychiatrists and psychologists, youth and eye doctors, educational staff, family and relationship therapists, child coaches, politicians and even the designer of the very first mobile phone) sounding the alarm?

Why are the teenagers of world star Penelope Cruz not allowed on social media? Why do pop idols Justin Bieber, Ed Sheeran, Elton John and other celebrities not have a mobile phone? Why does pop singer Robbie Williams compare the internet to an addictive drug, does actor Hugh Grant call the tech sector a 'drug cartel' and does Arjen Lubach say that there is a 'crazy experiment' that 'might ruin an entire generation'?

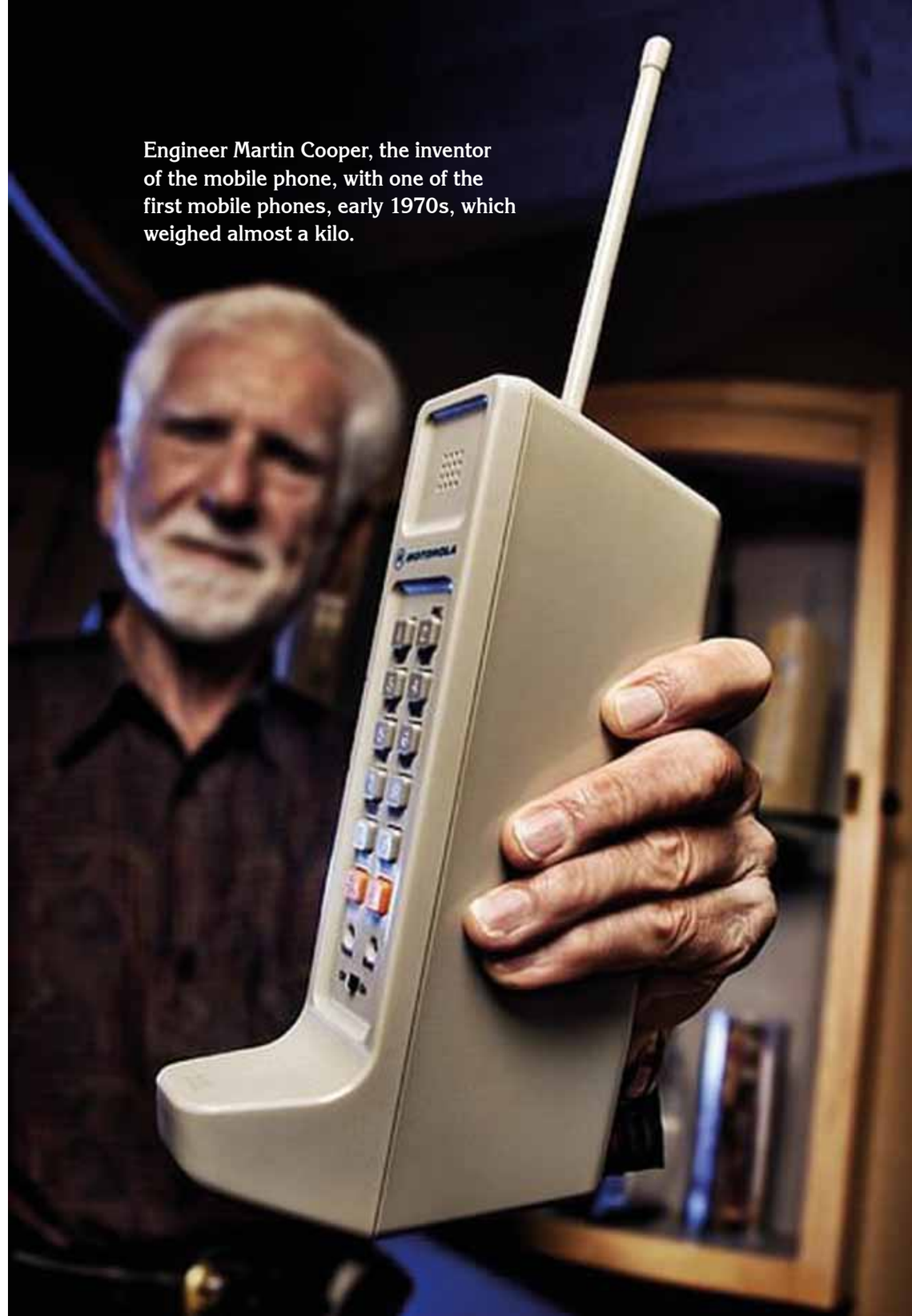
Glad I called?

While the ‘father of the mobile phone’, the now elderly, former Motorola entrepreneur and inventor Martin Cooper in the early seventies of the twentieth century developed the first mobile phone, most people at the time were of the opinion that a wireless phone was a product for which there was no market.[1]

Even in 1998, the question that journalist Frans Bromet asked random Dutch people on the street: “Do you have a mobile phone?” still yielded answers like: “I don’t see the point in it”, “Waste of my money”, “It doesn’t seem fun at all to always be reachable” and “I’m happy without one too.”[2]

A lot has changed in the meantime. Especially since the arrival of the smartphone in 2007, wireless communication technologies are no longer imaginable without in our daily lives. Nowadays, young and old have a ‘supercomputer’ in their pocket. The possibility to always and everywhere be online reachable brings us a lot of convenience and efficiency: we feel freer than ever, can always find the way thanks to our GPS and find in a jiffy all the information we desire.

And what about the many incredibly handy and fun apps?! In short, the mobile phone has become an essential part of our daily lives. We can’t and don’t want to live without it anymore. Mobile reachability and wireless connection seem to have become basic necessities.



Engineer Martin Cooper, the inventor of the mobile phone, with one of the first mobile phones, early 1970s, which weighed almost a kilo.



Chapter 1

Downsides of screen use

Scrolling or socializing?

While we are increasingly often connected online and with more and more people and even devices communicate with each other, it turns out that in real life this is happening less and less.

We seem to prefer scrolling on our smartphone than engaging in connection with the people around us. A term was even coined for that in 2012: *phubbing* (a combination of 'phone' and 'snubbing': snub).

Research from 2016 shows that at that time already more than seventeen percent of us were guilty of phubbing at least four times a day.[1]

That is less innocent than it seems: studies show that not only friendships and relationships suffer from it, also the interaction between parent and child is disrupted and the responsiveness of parents towards their (young) offspring decreases. Therefore, phubbing can produce feelings of insecurity, distrust and rejection and lead to increased attachment anxiety.

Family and relationship therapist Susanne Donders recognizes the problem: "Children experience a lack of emotional availability when parents are holding their mobile phone instead of looking at them and responding to them. Children then drop out earlier and can feel rejected. Especially if they ask for attention.

That can influence later development and can lead to clinging behavior or withdrawing behavior in relationships", she tells in the RTL News article *Children are annoyed to death by smartphone use of their parents*.[2]

One in three young people between thirteen and eighteen would prefer if no smartphones were used during meals and in the car. One third of the young people sometimes ask a parent to put away his or her phone, but only one third of the parents comply with that.

This is evident from the research published in 2017 by the National Academy for Media and Society: *Smartphones within the family – young people are burdened by fanatic smartphone parents* in which 1849 young people and 637 parents were involved.[3]

To turn the problem into the solution and offer children of phone-addicted parents a helping hand, none other than telecom provider Ben came in collaboration with DDB Unlimited in 2019 with the media campaign *Ben er weer.*

In this series of humorous videos, Ben introduced a Google voice tool with which children could address their parents via their phone on their behavior. Denise van Dongen, social media manager at Ben: "We show in different ways that it is important to be aware of your own phone behavior and sometimes put away your device too. By shaking everyone awake in a humorous way, Ben hopes that more real contact between people will arise again, without that screen in between all the time." [4]

Young learned ...

Many parents struggle with the question of whether and at what age they should give their child their own smartphone. The reassuring idea that parent and child can then reach each other anywhere if needed often tips the balance. But what do we know about the serious disadvantages for children that come with the use of smartphones?

Studies have shown that it affects fine motor skills and limits the learning of written language. In addition, smartphone use can promote obesity, social isolation, loss of privacy and cybercrime.[5]

Although the World Health Organisation (WHO) advises to allow children up to two years no and children up to five years a maximum of one hour per day screen time, children from zero to seven years appear to spend an average of almost one hour and three quarters per day on social media.

One in four parents of zero- and one-year-olds indicates that their child spends at least two hours a day on television, phone or tablet. According to twenty percent of parents of two- and three-year-olds and thirty percent of parents of four- to six-year-olds, their offspring does that respectively at least three hours and two hours per day.

This is evident from in-depth research by Netwerk Mediawijsheid in collaboration with the Trimbos Institute and Hogeschool Windesheim on the role of media use and other activities in relation to sitting, lying and movement behavior of children from zero to six years and the role that parents play in this.

Almost half of the surveyed parents find it difficult to set a good example for their children. Children not only mirror how adults handle their smartphone, they also develop an unhealthy relationship with screens if their parents use them to keep them occupied.

"In previous years, we have already seen an increase in daily screen time among young children. That seems to continue now with another seven minutes added compared to 2022. That is worrying, because excessive use of digital media and too little movement at a young age can negatively affect sleep and language development and promote overweight and nearsightedness", says co-author lecturer dr. Peter Nikken of Hogeschool Windesheim.[6, 7]

Also linguist, Youth & Media specialist and founder of Bureau Jeugd & Media Justine Pardoen warns: "Research shows that young children under four years who look a lot at a screen, are hindered in their development. Especially their language development and cognitive abilities are at risk. Children learn that they can satisfy unrest with a screen, but other skills such as attentively listening to someone

or concentrating, they develop less as a result. Also the attachment between parent and child is endangered: if you look a lot at a screen, you make less eye contact with your child. That is harmful for the bond."[8]

The Canadian dr. Catherine Birken, pediatrician and scientist at The Hospital for Sick Children, investigated between 2011 and 2015 the effects of wireless screen use in nearly nine hundred children between six months and two years. Twenty percent of the studied children had according to their parents a daily average screen use of almost half an hour.

Birken found that the longer the daily screen time according to the parents was, the greater the chance of delays in speech development. Every half hour longer appeared to increase that risk even by forty-nine percent.[9]

According to an Australian study published in March 2024, toddlers miss up to a thousand words per day due to screen use and can therefore communicate worse with their parents. For this study, 220 Australian families were followed for two and a half years, collecting more than seven thousand hours of audio data. From the analysis of that, every minute of screen time at three years old appeared to cause a decrease of seven spoken words by adults, five child vocalizations and one parent-child interaction. "Given the average screen time of 172 minutes per day, children can daily miss up to 1,139 adult words, 843 child vocalizations and 194 parent-child interactions", the scientists state.[10]

Experts worried about doubling screen time Dutch children headlined an online NOS Nieuwsuur article on May 1, 2024. Among other things, it states that research by Netwerk Mediawijsheid and Hogeschool Windesheim showed that the screen time of children up to six years has almost doubled in ten years.[11] The study paints a worrying picture of the mental and physical health of young children. Eye and back complaints, sleep problems, worse motor development and reduced endurance occur more and more often.

In December 2024, Vodafone Ziggo published a news item about a study conducted by Vodafone on the consequences of screen time. The title of the message speaks for itself: *Friction in families due to smartphones: parents and young people want more personal contact*. Among other things, the study concludes that '93% of parents understand that smartphones are important for their children'. At the same time, a substantial part of the parents worries about too much screen time (56%), addiction (47%) and poor night's sleep (32%). According to Vodafone, 72% of parents have established rules for the smartphone use of their child(ren).[12]

Odido comes mid-2025 with a similar campaign: *Use your voice against loneliness*. 'More than 1 in 3 young people feels alone', the website reports. 'While making contact is easier than ever, with full contact lists, hundreds of followers and dozens of group apps. But we make real contact less and less. Conversations become quieter. And loneliness creeps in quietly. While your voice can make the difference.'

And if it's up to Odido, preferably by calling each other. That is namely what we see in the campaign video: the lonely young person gets a phone call and visibly cheers up from it.[13]

Although the Iene Miene Media research published in April 2025 (an annually repeated study on media use in families with young children from zero to six years) shows a slightly declining trend in the screen time of the children (86 minutes versus 111 minutes), the average of almost one and a half hours per day at that moment is still well above the time recommended by the WHO.[14, 15]

Sleep, child, sleep

Who doesn't know it: just before going to sleep, quickly check if there are messages, quickly watch that one video, game a bit or send an app. Nothing wrong with that, you would say. However, children's brains are extra sensitive to the blue light that comes from the screens. That light keeps the brain awake. The RIVM, Amsterdam University Medical Center, the Netherlands Brain Institute and data and biobank

Lifelines conducted research in 2019 among over 1300 children between eight and eighteen years.

Of the children between eight and thirteen, one in five children appeared not only during the day, but also just before going to sleep still looking at their phone. In the age of thirteen to eighteen, that was four out of five. The research showed that the research group that shortly before sleeping had still looked at a screen, compared to the group that had not done so, slept shorter, had more difficulty falling asleep and woke up regularly at night.

Occasionally a 'bad night' everyone has of course, but chronic sleep deprivation is much less innocent. Head Health Protection Susan Janssen of the RIVM, in 2019 in an interview with NOS News: "In the longer term, it can lead to health problems. You can really get sick from it, for example get heart complaints or diabetes from it."[16]

"It is high time that the Netherlands faces this acute problem. Everyone is responsible", wrote Inge Schouten in 2016 in the NRC column *Take away that mobile. That's called parenting.* After 27 years as a geography teacher, she led a homework institute at the time.

"Parents and schools can no longer ignore this problem. Parents must ensure that their children have a healthy night's sleep. That simply means they have to take away the phone in the evening. So you have to engage in battle with your children, as you have to on so many fronts. That's called parenting."[17]

For pregnant women, it is advisable anyway to avoid screen use in the evening and night. The blue light from the screen reduces melatonin production and thereby disrupts the biological clock that among other things regulates hormone release and metabolism. American research from 2023 suggests that this can affect the development of the fetus and the risk of autism spectrum disorders and chronic diseases later in life can increase.[18]

Game hunchback, whatsapp hand or text neck?

We already know the term mouse arm: an injury to the arm, neck, wrist and shoulder muscles, mainly due to excessive computer and computer mouse use. But with the arrival of the smartphone, tablet and wireless laptop, we have started to burden our body differently and a handful of new physical ailments have arisen.

Tablet necks and iPad or game hunchbacks are occurring more and more often. Physiotherapists have been raising the alarm for years, especially because more and more young people experience complaints and deformities in the back and neck that fit a fifty-year-old.

Neurosurgeons are no longer surprised by a sixteen-year-old with a hernia. "The back of children is like a bonsai tree; it grows in the direction you send it. If that's a bent posture, you get a flattening of the vertebrae. Once the children are about twenty, they get complaints", physiotherapist Marlous de Haan already told in 2016 in the NOS Radio1 news.

But there is more: for example, do you have cramps in your fingers, sore muscles or inflamed tendons as a result of non-stop scrolling, apping and playing games on your phone? Then we speak of a whatsapp hand. Painful neck or back muscles due to prolonged bent over sitting with phone, laptop or tablet we call text neck or iPosture.

Does reading messages and tweets give you tired or dry eyes, poor vision, dizziness and headache? Then you may be suffering from Computer Vision Syndrome. In children, frequent screen use can lead to serious and permanent eye damage such as nearsightedness, detached retina, glaucoma or even blindness.

Eye doctor Keamela Vasanthananthan of the Utrecht Diakonessenhuis signals a big problem:

"It is a pandemic. It is getting busier and busier."[19]

Aap, Noot, Mies

From comparative international research by Pisa (Programme for International Student Assessment), which every three to four years tests the skills and knowledge in natural sciences, reading and mathematics of fifteen-year-olds, it emerged in 2022 that reading proficiency in the Netherlands is deteriorating rapidly.

The percentage of students who do not reach the required reading level has risen from 25 to 33 percent between 2018 and 2022.[20] Teachers of primary schools, teachers in secondary education, school directors and child coaches see these developments with sorrow.

They mainly attribute it to the 'screen culture' of nowadays: "Children no longer really read books. In the past, I said to my children at home: first read a number of pages, then you can watch TV. Now the screen goes on immediately", child coach and kindergarten teacher Diane Lakerveld from Aerdenhout tells at the end of 2023 in an interview with RTL News.

"The book has faded into the background. Primary schools and parents have allowed that too", adds English teacher Henny Makkink from Heerenveen. Also for Elize Jong, director of an Amsterdam primary school, it is crystal clear: "It is more serious than before. How is that possible? There is only one real cause: the ever-present screen."[21]

A fragmented brain? That's not nice!

In his blog *Can adults handle smartphones better than children?* neuropsychiatrist Theo Compernolle signals another risk of frequent smartphone use by children: "In the young brain, the steering skills are not yet sufficiently developed to resist the temptations of a smartphone.

An example of a steering skill is attention control. This is the skill to choose what you give attention to and what you ignore (selection) and also to keep your attention focused (focus), despite distraction. Children have not yet developed this skill to such an extent that they can resist the distraction of for example apps."[22]

As a result of the constant stream of notifications, messages and emails, we multitask frequently and the focus is continuously interrupted. As a result, the brain is not (anymore) able to devote long-term uninterrupted attention to one task or matter. In the long term, this can result in reduced productivity, stress or burnout symptoms. For this phenomenon, which not only affects children, Compernolle coined the term *fragmented brain* in 2020.

In 2022, his book *Unleash the brain of your child – from screen addiction to digital freedom* appeared in which questions like 'is the number of hours that my child spends with a screen normal?', 'Does gaming and use of social media hinder the learning ability of our child?' and 'How can we protect our children against excessive use of digital media?' are central.[23]

Peer pressure among teens

The majority of children older than eleven years have their own smartphone and for many of them, being busy with it is the most favorite activity. Research agency No Ties conducted research on behalf of the NOS Jeugdjournaal on smartphone addiction among children.[24]

It showed that more than half of the over five hundred surveyed children between nine and thirteen years, according to their own words, in more or less degree, are addicted to their smartphone. The children indicated often feeling the need to look at their phone and then having difficulty detaching themselves from it.

Eighty percent of them reported often staying online longer than planned. "If I want a quarter of an hour, it certainly becomes half an hour, three quarters to an hour." Teens and adolescents are enormously sensitive to group pressure, they compare themselves to others and adapt their behavior and opinion to their peers. 'Belonging' is in this age phase of vital importance. Having a smartphone and participating on social media play a crucial role in that.

Linguist and specialist Youth & Media Justine Pardoen: “Teens think that without internet or social media they alienate from the group. That fear is enormously great. Social exclusion is even visible in the pain center of the brain. Internet satisfies the need of teens to be connected, but can also lead to somber feelings. Partly because they look at the lives of others, but also because they no longer feel their own will and become unhappy from that.”[25]

Secondary school students spend an average of no less than five hours per day with their phone. The price they pay for that concerns not only disturbed night’s sleep, also the mental health and the academic performance of the young people suffer from it.

Researcher Liesbeth van der Woud of DUO Educational Research & Advice confirms this. In collaboration with the *AD*, she conducted research in 2017 among over thirteen hundred teachers in secondary education: “It is worrying that so many teachers see that the social media use of their students not only leads to worse educational performance, but also to social and psychological problems.”[26]

Korean research from 2023 among over forty thousand adolescents showed that smartphone use of four or more hours per day causes increased stress, gloom, suicidal thoughts, sleep problems and increased alcohol and nicotine use.[27]

Not to mention cyberbullying, sexting (sending sexually tinged messages, photos or videos of yourself online) or – even worse – sextortion (a form of extortion where someone threatens to make these messages or images public) ...

For the then nine-year-old daughter of comedian Pieter Derks, the time until her twelfth birthday can’t pass quickly enough: then she ‘may’ have a mobile phone from her father! That Derks himself is looking forward much less eagerly to the twelfth birthday of his daughter appears in the weekly NPO radio 1 column Druktemakers in which he on April 12, 2023 in less than five minutes in an impressive way casts a confronting look at the mobile phone: “Giving my child a

mobile soon feels like pressing a carton of cigarettes into her hands and saying: be careful, huh!”

Troublemaker Derks, as usual, doesn’t mince words: “The biggest disease that the phone brings with it is psychological: detachment, overstimulation, depression, loss of concentration. The phone is in all sorts of ways literally and figuratively mind-killing. I have one myself. I am addicted. I have been trying to quit for years. But it doesn’t work.

It took quite a long time before the penny dropped, but I see it now: mobile phones are the cigarettes of the 21st century.

A huge industry that spends tons of money to get as many people addicted as possible. For example by letting children come into contact young with screens and already creating a Google account at school. And by connecting all devices in your house to your phone, so you have no idea anymore how you could ever live without it.”

How much Derks hopes that his daughter will abandon her fervent desire appears from the ‘deal’ that the comedian has already made with her for safety: “If she manages to not touch a mobile phone until her eighteenth, she gets a carton of cigarettes from me.”[28]



Chapter 2

Concerned about smartphone addiction?

Nomophobia: a growing problem

On April 3, 1973, the first conversation was held with the DynaTAC: the very first mobile phone with a weight of over a kilo and a battery life of half an hour.

In an interview that the French press agency Agence France Press (AFP) had with Martin Cooper for the fiftieth anniversary, the 93-year-old designer of the DynaTAC, he made a striking statement: “People with smartphones look at them too much, they become completely absorbed by them. This thing still has enormous potential, but we are somewhat obsessed at the moment.”[1]

Getting nervous when the phone’s battery is almost empty, always taking the phone to the toilet or under the shower, wanting to view and respond to notifications immediately, stressing out without a phone, irritation when there is no signal, restlessness and doomsday thoughts when a message is not immediately answered while it is visible that the recipient has already read it, lying about the number of hours of daily screen time, endlessly checking social media aimlessly for hours, feeling vibrations from the phone while it’s not in your pocket at all...

This kind of thing will be recognizable to many of us to a greater or lesser extent, but when it is accompanied by physical symptoms such as pressure on the chest, difficulty breathing, trembling, sweating,

increased heart rate, dizziness and confusion or weakness, we may be suffering from *nomophobia*.

The term *nomophobia* was introduced in Great Britain in 2008 and stands for *no mobile phone phobia*: experiencing stress and anxiety when we do not have our mobile phone within reach. Although not yet officially recognized as a mental disorder in the Netherlands, this anxiety disorder is also increasing rapidly in our country.

Psychologist Bjarne Timonen already told EditieNL in 2020 that many people suffer from nomophobia. “We are massively addicted to our phones, and it will probably only get worse. The smartphone has become a limb. It’s not going away.”

Physiotherapist and experience expert Marlous de Haan conducted research into nomophobia in 2020 and came to a confronting conclusion: “Worldwide, 80% of smartphone users would be nomophobic. In the Netherlands, that also seems to be the case; the first results of my research hardly deviate from that percentage.”[2]

Market research and advisory firm Motivaction published a study in March 2023 with stunning results: 43% of men, 72% of women and 81% of young people indicated preferring a week without sex over a week without a smartphone. A third of the Dutch would even choose, in exchange for their smartphone, to abstain from sex for the rest of their lives.

Among young people between 18 and 24 years old, that was as much as 49%. The study also showed that 17% of the Dutch (and 36% of the young people) would rather lose a pinky finger than never be able to use a smartphone again. 82% would choose to go a week without alcohol rather than having to go a week without a smartphone.[3]

It is therefore not surprising, but all the more disturbing that parents are more afraid that their teenager is addicted to the internet than to drugs. This is evident from a study published in October 2023 by the New York-based Child Mind Institute. The research group consisted of more than a thousand parents, of which more than half (51.1%) indicated being concerned about the influence of the internet on the social development of their child. 46.2% worried about cognitive

development and another 46.7% about the effects on physical development.[4]

The NoPhone – sensible or worrisome?

Why would someone be willing to pay € 16.95 for a NoPhone: a piece of plastic in the shape of a smartphone? Because with it we feel like we have a smartphone in our hand, but without distraction.

Creative designer and advertiser Ingmar Larsen came up with the idea to design this anti-gadget when he was sitting on a roof in Manhattan with three colleagues in 2014. Instead of enjoying the view, the four were just staring at their screens. The idea behind the NoPhone is that it would help with awareness of the tendency to check our phone every ten minutes.

In ten years, nearly twenty thousand plastic fake phones were sold. NoPhone quickly expanded its range significantly and had an estimated net worth of around one hundred and fifty thousand dollars in 2025.

“People who are addicted have no control over the moments when they use their phone. They panic without a smartphone. That you need a phantom device to get rid of your phone addiction, I find worrisome. And its success may indicate how bad the addiction is for some”, said Kevin Hengst, senior research consultant at Motivaction in 2014 on the RTL Nieuws website.[5]

Celebrities without smartphones

“I got very stressed and sad from my phone. I didn’t feel good because of it. When I got rid of it, it was a big relief”, singer-songwriter Ed Sheeran said in 2022 in the British Collector’s Edition podcast. The singer lived from 2015 to 2021 without a mobile phone but then acquired a so-called *dumbphone*: a device with push buttons, a non-touch display and limited internet capabilities. How does he do it?

"Every few days I open my laptop and answer ten emails. Then I put the laptop away again and go back to my real life."[6]

Sheeran's good friend and colleague Elton John also doesn't want a phone: "My life is fantastic. I don't have people calling me twice a minute."[7] The celebrities make contact through video calling via their tablet.

Simon Cowell, judge on Britain's Got Talent, noticed that since he got rid of his mobile phone in 2007, he became more aware of the people around him: "I became more focused. It was great for my mental health and made me completely happy."[8]

In the Telegraaf article *Justin Bieber has more peace without a smartphone*, the Canadian teen idol says that without a phone he can set better boundaries: "I now feel like I don't owe anyone anything anymore. It has helped me to say no more often and to follow my heart more. I like to help people, but I also have to learn that I can't always do that."[9]

The British-American director Christopher Nolan also doesn't have a smartphone and hesitates to use email: "I have a small flip phone that I take with me occasionally. I get distracted easily, so I really don't want to go online every time I get bored."[10]

Hollywood star Penélope Cruz and her husband have chosen not to give their son and daughter a mobile phone or allow social media accounts until they are sixteen. The film diva is very worried about the impact of smartphones and calls social media outright "a cruel experiment on children and teenagers". "There is no protection for them, for brains that are still developing and how that affects the way they see themselves", she warns.[11]

The children of Serbian tennis player Novak Djokovic complain that they, unlike their classmates, do not have a mobile phone. Djokovic, however, is not swayed: "If everyone does something, the herd behaves that way, then you have to follow them. Well, it doesn't have to be that way. I think we differ from others in this, because we are stubborn and active."[12]

Addiction as a business model

Smartphones and social media are deliberately designed to make us addicted. That sounds harsh, but this is how it works: the more our brains produce the substance dopamine, the stronger we feel that we are doing well. The human brain therefore automatically tends towards activities where this feel-good substance is released. What turns out? Every time a notification, like or interesting content appears on our smartphone, our brains produce dopamine. And we want more and more of that.

The reason we check our phone so often is therefore not really a conscious choice, but an urge from our brains, caused by the need for dopamine. The dopamine hit feels like a reward, but the pitfall is that every time dopamine is produced, the need for yet another dose of dopamine becomes greater. The more often we check our phone, the stronger the urge becomes to do it again afterward.

A phenomenon that plays a major role especially on social media is 'variable reward': we never know for sure if we have received messages, likes or interesting comments. That makes us want to check it again and again. Posting content ourselves on social media increases the chance of messages and likes, so that also fuels our dopamine addiction further. The industry is familiar with this principle and gratefully makes use of it.

By linking advertisements to free services and selling our data, a lot of money is earned. In other words: the longer we are busy with our phone or hanging around on social media, the more money that brings in. Thus, our addiction has become a business model.

An important trick applied on social media to hold our attention as long as possible is the absence of so-called *stopping cues*: the infinite timeline of Facebook and Instagram are examples of this. A well-known trap of YouTube or Netflix is the automatic playback of the next video.

According to Australian psychiatrist Professor Ian Hickie of the Brain and Mind Centre at the University of Sydney, the way the apps on our phones are designed makes our brains constantly search for reward: "Mobile phones attract a huge amount of attention and that is very exciting for the brain. They use audio and visual tricks and offer us constant updates. Just like with slot machines."[13]

"I want more. Check if I have anything else on my TikTok, my YouTube, the Snap or the Gram. Just check hundreds of messages in my DM. One clip and then done, I say without kidding, but then I still keep scrolling for hours!" Recognizable? For Lars Bos, better known as the popular Dutch rapper Snelle, in any case yes.

Especially for Niels van der Laan and Jeroen Woe of the satirical current affairs program 'Even tot Hier', he rebuilt the lyrics of his number one hit single *Reünie* into *Nee, Nu Nie*: an encouragement to stop 'doomscrolling' and sometimes just put the phone away. "Man I can't wait until the EU makes those laws for the industry, because I can't do it. I don't want to be disturbed, no now not."[14]

Attempts by politicians

Fortunately, there is the initiative of Kim van Sparrentak, Member of the European Parliament for GroenLinks. That 'the socials' are so enormously addictive is a thorn in the side of the politician: "Whole armies of experts do everything to keep you on their app or website as often and as long as possible, with all the consequences. In our society, everyone is constantly distracted by their phone. According to some reports, one in four young people even shows characteristics of smartphone addiction.

This has major consequences and for example promotes depression, attention disorders and low self-esteem. We really have to take hard action against this."[15]

Van Sparrentak is not alone in this: a initiative proposal submitted by her in September 2023 to the European Parliament in which she indicated wanting to curb this, was adopted by a large majority. The proposal called among other things for banning endless scroll functions and automatic playback of videos and setting the notifications and likes to 'off' by default so that users can choose themselves when and which they want to receive.[16]

"This is one of the challenges of our time. If we don't intervene now, this will have a major impact on entire generations later", she warned.[17] In her own country, D66 MP Hanneke van der Werf, who considers phones as "a kind of slot machines with an addiction sensitivity comparable to nicotine", has advocated for a minimum age of 15 years for social media.[18]

The motion she submitted together with NSC at the beginning of 2025 was adopted. "Parents have been asking for measures for longer. Science states that addictive social media have enormous impact on the development of children. Enough is enough, we will no longer let tech companies walk all over us. Cigarette manufacturers also do not determine their own age limit", said Van der Werf.[19]

Vivian den Blanken of the Dutch Youth Institute (NJi) acknowledges the need for a guideline, but is skeptical about an age standard: "A child-friendly online environment is not achieved with a minimum age, but by tackling algorithms. The responsibility for that lies with the tech companies. They must tackle the addictive elements of their platforms. Because to be resilient online, children first need a protective environment."[20]

The government also wants to curb the use of social media by children. This was stated by then State Secretary for Youth and Prevention Vincent Karremans (VVD) in February 2025 in an interview with RTL Nieuws. "As a government, we want to set a clear age limit and give guidelines as advice to parents. This advice can for example include parents forbidding their children to use social media after a certain time or only giving a smartphone when they have reached a certain age."

The guideline was titled *Healthy Screen Use* and was presented on June 17, 2025: no social media until fifteen years, no smartphone until group 8 and recommendations for a maximum screen time per age category. For children under two years, screen use is discouraged, for young people aged twelve and older it is advised to spend no more than three hours per day behind a screen.

In addition, the guideline emphasizes the importance of 'balance between screen time and other activities; using media together and promoting positive online experiences' and gives tips on how parents can start the conversation with their child(ren). Note well, it is not a law with fines and punishments but an advice based on which parents can make agreements with their children.[21]

The advice is part of the public campaign *Blijf in Beeld* launched in September 2025 by the Ministry of the Interior, which aims to help parents with the first smartphone use of their child and to give practical tips on how to protect children online.

Childhood: short and precious

"Childhood is too short to spend on a smartphone", think journalists Merel Uildriks and Danielle Batist and actress Thekla Reuten. That's why they launched the *grassroots movement Smartphone-Free Growing Up* in 2024. The mission of the trio is to increase the national conversation about the damage of smartphones and social media; to provide parents and schools with *tools* and materials to make joint action easier and to put pressure on governments and tech companies to do more to protect childhood.

Parents can join by signing a *Parent Pact* in which they indicate to wait with giving a smartphone to their child(ren) until the age of fourteen. "The child's brain is not ready for it yet. Many apps are designed with addiction mechanisms. Children are extremely sensitive to that. Precisely because they need stimuli, but do not yet have good impulse control", Batist tells in a Nieuwsuur report from May 12,

2025.[22] The initiative is a great success: at the time of writing (May 2025), the pact has been signed by parents of over thirty-six thousand children at more than four thousand schools.[23]

At the end of May 2025, *Smartphone-Free Growing Up* posted an open letter online in which a group of nearly fifteen hundred doctors, scientists and practitioners from various disciplines endorse the concerns expressed in the Parent Pact and call for "urgent action against the growing health and welfare crisis as a result of excessive and age-inappropriate screen and social media use among children and young people."[24]

A few days later, an online response to the open letter from the Brain Foundation followed in which "the concerns about the influence of smartphones on the well-being of children and young people" are acknowledged.

"The intensive use of smartphones has effects on our brains. One of the most important, but often underestimated, consequences is the impact on the sleep of young people. Good sleep is essential for the development of the brain. Precisely during the teenage years, sufficient and qualitatively good sleep is crucial for concentration, memory, mood and processing emotions. Yet research from among others the RIVM shows that young people structurally sleep too little. Many young people stay active on their phone late in the evening and therefore do not get the rest their brains need", according to the foundation.[25]

In the grip of Big Tech?

British actor Hugh Grant doesn't mince words. According to him, the telecom sector is "the largest and most powerful industry in the world that has set its sights on destroying the childhood of our offspring".

He made this bold statement at the beginning of 2025 in the online webinar *The Phone-Based Childhood, EdTech & What To Do About It*, hosted by Sophie Windsor of the British School-Home Support. "We see our children suffer terribly and it is very depressing to see how Big

Tech hijacks their youth. Children find it enormously difficult to be interested in anything other than their little screen. During outings, it takes at most twenty to forty-five minutes before they want to go back to their screens."

Grant finds it "enormously depressing" that his children's new school decided to give everyone a free Chromebook or iPad. "How can that be a good idea?! Children have the right to a school where they can be free from this insane addiction for six hours. With the gigantic power they have, Big Tech has a lot in common with a drug cartel trying to peddle its goods to children. And instead of calling the police right away, schools offer these drug dealers tea and cookies."[26]

Robbie Williams has forbidden his four children to have a phone and compares the internet to an addictive drug. In an exclusive interview with ITV News London ahead of a performance in Camden, the singer explained how the internet could "ruin" his day and that he wanted to protect his family.

Robbie said that giving a phone to his children amounts to a form of "abuse", adding: "They don't have phones, and they will get no phones for as long as possible. They are at school, other children have phones. Too bad. It's that simple. I'm 51. I can't handle the corrosive nature of the internet, it hurts me, it ruins my day. How can I give this drug to a 12-year-old? How can I give this drug to a 7-year-old? That's abuse."[27]

Former politician and privacy expert Marietje Schaake, who has been teaching at and director of the Cyber Policy Center at Stanford University in the heart of Silicon Valley since 2019, travels the world to warn not only governments, but also companies and human rights organizations about the power and abuse of power by the big tech companies.

"At the big social platforms, everything is aimed at keeping you as long as possible", she said in December 2024 in an interview with weekly magazine *Libelle*. "That is a deliberate choice, with which they have large commercial interests. They earn a lot of money from it, but for your brain and especially for that of children it is very bad. Those

companies know that damn well, but they choose not to do anything about it. Their commercial interests are the most important."[28]

Schaake therefore regards Big Tech as a "ruthless monopolist that rules the world and only benefits itself from it". She writes that in *The Tech Coup - how tech has come to rule and we reclaim the power*: a sometimes blood-curdling description of how we lost control over Big Tech and what we can do about it.

Due to the ever-increasing digitization of all aspects of our lives, tech companies have gained more and more power and governments have also become dependent on them for their vital infrastructures. That, combined with "excessive power, financial resources, data and computing power", has given the tech sector the opportunity to openly disregard laws and regulations.

This has made regulation impossible. In her book, Schaake therefore calls for a "drastic course correction" in the form of "a joint, global coalition", that develops an "overarching framework for digital technology" with which democratic values can be protected and restored. However, it will still be quite a challenge to get the "profitable monopolies" with "strongly anti-legislation practices", as she puts it, on board with that.

Deep Dive Thursday with Arjen Lubach

"We need to talk about children, smartphones and social media because I think that's not going well", said the Dutch writer, comedian, television presenter and music producer Arjan Lubach on April 10, 2025 in his satirical current affairs and news program *LUBACH*.

In that episode, Lubach went in search of an answer to the question that many parents struggle with: "Should I give my child a smartphone?" Most Dutch children get a smartphone between their eighth and twelfth year. "We are engaged in an insane experiment that might ruin an entire generation", thinks Lubach.

"Smartphones are fantastic, but also terrible, everyone struggles with them. Me too. But for children and young people it is really hard to put that thing away." Children are addicted, and they know it themselves. Seven out of ten young people indicate that they have difficulty stopping scrolling.

An American study has even discovered that young people would be willing to pay money to make TikTok and Instagram disappear. "They would therefore pay for a world without social media. That's sick, right!?", Lubach reacts. "So this is the biggest parenting concern of the moment. Not drugs, not alcohol, not smoking, no, social media use. Children all have a smartphone with apps that are completely designed to hold their attention as long as possible. Our youth really has an addiction problem."

This not only comes at the expense of children's sleep, but also of their exercise ("seventeen percent of children never play outside anymore"), their homework and grades, their mental well-being and even their eyes. According to mother Maxima, Princess Ariane now also has eye problems due to her screen use.[29,30]

The EU threatened in 2024 to ban TikTok because it "would be just as addictive as cigarettes", unless the company provided "compelling" new evidence that children are protected. Concrete action remained absent from both sides.[31]

"Some people say: 'We should ask the tech companies to make their shit less addictive.' But yeah, something tells me they're not going to do that", says Lubach. That's why he refers to initiatives like *Smartphone-Free Growing Up* and concludes the episode with a number of tips: we must realize that children should get their first smartphone as late as possible and we must do something about the peer pressure that every child must have a smartphone. "I understand that it feels awkward to be the nag, but you are a nag with reason. And it's for your child, right, you do everything for your child, even the awkward things. So, parents of the Netherlands, arrange this."

"Quick action is needed to protect younger generations from a future characterized by increasing anger, aggression and violence. We urge parents at least to delay giving a smartphone to their child until at least group 8 or thirteen years, so that they get more time to develop healthier social skills and reduce the tendency to anger and aggression", states Tara Thiagarajan, founder and chief scientist of the American Sapien Labs in the report *The Youth Mind: rising aggression and anger*. This 2025 document is a report of a study into the causes of increasing suicides and violence among 10,475 American and Indian children between thirteen and seventeen years old.[32]

That we would do our children a great favor if we followed the tips of Lubach and others was evident from a message that Hart van Nederland published on May 1, 2025. Representative research that UNICEF Netherlands conducted among over a thousand young people between ten and eighteen years showed that no less than 69% of them think that social media should be banned for young children.

The young people call social media "addictive, unsafe and harmful to mental well-being" and think that no platform does enough against harmful content or endless scrolling. UNICEF director Suzanne Laszlo considers these research results as "a very clear call from children and young people themselves for better online protection".[33]

Six out of ten Dutch people have started thinking more negatively about social media. This was shown at the beginning of June 2025 from research among over 22,000 members of the EenVandaag Opinion Panel, of which the majority (87 percent) use social media themselves.

According to the participants, the addictive side of these platforms has increased. "I used to be very into technology, but now I'm rather distrustful", someone reports. "I can't even watch a movie anymore without stopping a few times to TikTok again", writes a young person. "More and more is becoming known about how social media influence us without us really noticing. The companies behind it have too much power", thinks another.[34]

Smart move by tech giants

"As the tobacco industry has known for years that smoking is really bad for you, so the children of all the big tech figures in Silicon Valley are not allowed an iPad at home. Because daddy tells the world how cool the thing is, but meanwhile knows very well what kind of junk he is selling", sneers comedian Pieter Derks in his NPO 1 Druktemakers column.[28] And he has a point there.

Besides tech giants like the late Steve Jobs and Bill Gates, many executives of tech companies in Silicon Valley have indeed raised their offspring almost tech-free. "They have never used an iPad, we limit the amount of technology that our children can use at home", Jobs said in 2010, in an interview with the New York Times.[35, 36]

Athena Chavarria, executive assistant to Mark Zuckerberg's empire, speaks plainly: "I am convinced that the devil lives in our phones and is causing great damage to our children."

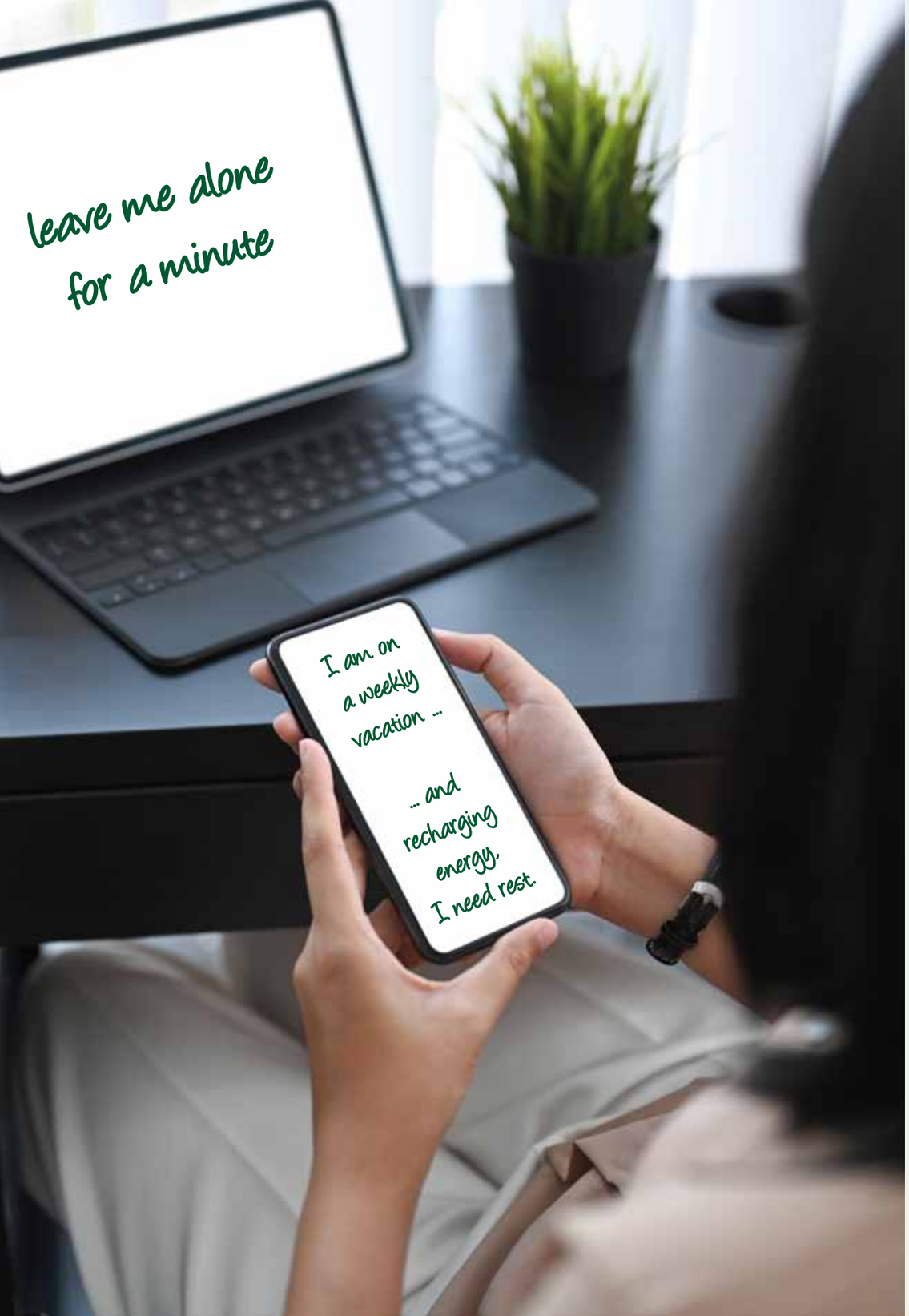
The Waldorf School of the Peninsula in Silicon Valley, where many children of Google, Apple and eBay employees attend primary education, also keeps digital teaching aids and computers out.

Google director Alan Eagle: "I fundamentally disagree with the idea that you would need technology in primary school."[37]

In this light, the national guideline to ban mobile phones, iPads and smartwatches in Dutch schools (*At Home or in the Safe*), is nothing more than a first step in the right direction.[38,39]



Image by Mircea Iancu



Chapter 3

Looking for smart solutions?

General tips

Turn off notifications; set a timer; set your screen to black and white (it has been proven that people scroll less long because of that); put the phone away from you and avoid *doomscrolling* (scrolling for the sake of scrolling) by using your phone only with a specific purpose.

Self-test for young adults: Are you digitally balanced?

The self-test of the Digital Balance Model was developed by Network Media Literacy with the Trimbos Institute and covers social, mental and physical health.[1]

Wiser in digital balance – practical guide for professionals

Information and advice for people who work with children, students and/or clients between zero and eighteen years.[2]

Set screen time for your children[3]

Dutch Youth Institute (NJi):
How do I keep my screen time under control?[4]
15 questions and answers about media education[5]
Media Literacy Toolbox[6]

The digital detox

What is a digital detox and how do you do it?[7]
More offline? Download this free *challenge* now[8]
Digital detox challenge – less smartphone, more focus[9]
10 days of digital detoxing[10]

The Dopamine BluePrint

With this program, you learn in four weeks how to make dopamine work for instead of against you and make yourself resilient against all distraction, temptation and (digital) noise from our modern environment.[11]

Go retro with the dumbphone

A phone without WhatsApp, social media and addictive apps, with which you can only call and text. It is a real trend: in 2021, more than 1 billion were sold worldwide, over 600 million more than in 2019.[12]





PART II

Is radiation harmful?

What do you think: can you get sick from radiation?
A: No way, nothing wrong!
B: Maybe, but there is a safe
exposure limit?!
C: Yes, that has been shown in tens of
thousands of scientificstudies.

Do you want to know if your answer is correct?
Then read on!



INTRODUCTION PART II

The government wouldn't roll out wireless technologies over our heads if they hadn't first been thoroughly researched and tested for safety?! Moreover, there are, as a precaution, exposure limits for this kind of radiation established and the Health Council says there are no proven risks to health.

The answer to the question 'is radiation harmful?' will therefore be 'no'. But is that indeed the case? On what basis, how, by whom and when were the exposure limits actually established? How protective are they really? How is it possible that there are tens of thousands of studies worldwide that did find health effects from radiation? Are they all wrong?

Is it exaggerated that there are many hundreds of scientists worldwide who are raising the alarm? What do they know about the health risks of wireless? Can we still get health complaints from it? What do doctors say about this? Are the concerns of celebrities like pop singer Adele, former Miss Universe NL Charlotte Labee and ex-top model Doutzen Kroes justified? Who should we believe now?

Why is this kind of radiation sometimes mentioned in the same breath as smoking and asbestos? Why do insurance policies explicitly exclude the risks of it? Why do telecom providers warn their shareholders in annual reports for possible future damage claims and lawsuits? And what can we do to protect ourselves and our children against the possible risks?



Chapter 4

No Evidence for Health Effects?

Government Agencies: “Beware of Heating!”

Anyone searching the internet for an answer to the question of what the health risks are from radiation from wireless equipment will quickly discover that it is scientifically proven that this radiation causes heating of tissue.

This is also called the ‘thermal effect.’ For example, the website of the Dutch government states: “Antennas for mobile communication use radio waves – just like walkie-talkies or mobile phones. Radio waves are a form of radiation. Exposure to radio waves at a very high level can cause the body to **heat up**.”[1]

In the brochure *Everything about antennas for mobile communication* from the National Digital Infrastructure Inspectorate (RDI – formerly the Telecom Agency) which claims to “work towards a safely connected Netherlands,” it states: “the signals from wifi, smartphones and transmission masts consist of electromagnetic fields. Research shows that these fields contain energy and can **heat** the body.”[2]

The Antenna Bureau (information office of the Dutch government on antennas for wireless and mobile communication) agrees: “The **heating effect** of antennas can pose risks to health.”[3]

The RIVM website echoes a similar message: if the radiation is strong enough, it can “lead to **overheating** and damage to tissues and organs.”[4]

GGD and the Knowledge Platform Electromagnetic Fields (KPEMV), a government agency for people with questions about radiation, appear to agree as well. The organizations report respectively: “Transmission masts and other devices can **heat** the body.” (GGD)[5]

“Fields with higher frequencies can lead to **heating** of body parts, similar to what a microwave does to food.” (Knowledge Platform EMV).[6]

In itself a consistent story, although it is not immediately clear what that ‘heating effect’ entails. Elevation? Fever? Can that do no harm?

To indicate that we need not worry about that heating, the mentioned organizations also unanimously report that exposure limits have been established for protection.

For example, the National Digital Infrastructure Inspectorate (RDI) states: “To prevent unnecessary heating, there are limits for the strength of these fields. These are **exposure limits**.”[2]

The Antenna Bureau: “Therefore, there are **exposure limits** to prevent the electromagnetic fields from antennas from heating us too much.”[3]

RIVM: “(...) **limits** have been established, below which these effects do not occur.”[4] “Therefore, transmission masts and other devices must comply with certain **requirements for the strength** of the electromagnetic field. It must not be so strong that the body or a part of it heats up too much.” (GGD)[5]

“Such effects only occur when the strength of the electromagnetic field exceeds the **exposure limits**.” (Knowledge Platform EMV).[6]

In short, if we are to believe the national advisory bodies and the government, we need not worry, because ‘heating’ is the only proven effect and, to prevent tissues from becoming too warm, safe exposure limits are applied.

But how does this reassurance relate to the statement on the RIVM site that “health effects in the long term are insufficiently known”? “Research into possible health effects in the long term from exposure to fields below the limits is still in full swing.”[4]

Limits Under Scrutiny

The unanimous heating message from the government is based on advice from ICNIRP (International Commission on Non-Ionizing Radiation Protection): a private company founded in Germany in 1992 that claims to be independent.[7] Yet this non-governmental organization (NGO) is 80% funded by the German State and works closely with the WHO, the International Labour Office (ILO) and the European Commission.

In 1998, ICNIRP established the exposure guideline. This now heavily outdated guideline (which is actually no more than an advice) has since been followed by most countries in the world. In 1999, the EU gave ICNIRP a big boost by recommending the ICNIRP exposure guideline to the EU member states. Since then, the Netherlands, like Germany, the United Kingdom, Sweden, Finland, the US and Japan, applies an exposure limit of 61 Volts per meter (V/m)/10 Watts per m^2 (W/m^2). (More information about the exposure limit in Appendix 1: *Wireless for Dummies – a concise look at how it works.*)

This is the highest limit in the world. In a number of other countries, including Belgium, the exposure limit is considerably lower as a precaution.

Would you believe it if someone told you that ICNIRP determined the upper limit

of the exposure guideline by conducting an animal experiment in the eighties in which eight rats and five monkeys were starved? The purpose was to determine how much radiation was needed before these unfortunate animals were no longer able to press a lever of a food machine.

The level at which that happened was so high that some of the monkeys suffered burns on their faces. Therefore, a completely arbitrary safety factor of 50 was applied and with that, the safety limit for the general public was a fact.[8]

Radiation is partially absorbed by our body and then converted into heat. To establish a safe upper limit for the **heating** of human tissue as a result of calling with a mobile phone, ICNIRP also performed a model

calculation in the nineties of the twentieth century. The simple question was central: whether a plastic head, filled with salt water, after six to thirty minutes of exposure to the radiation of a mobile phone, would heat up more than one degree. If yes, then the radiation exposure was too high. If not, then it was safe.

"That is complete nonsense and moreover completely unscientific," I hear you thinking. But as unbelievable as this may sound, it is exactly how it happened![9]

So it concerns an arbitrary exposure guideline that completely ignores the years-long 24/7 radiation exposure, ignores the many biological and health effects that have been scientifically demonstrated and is moreover heavily outdated.

In short, anyone who thinks that thanks to the exposure limits there is no reason for concern, unfortunately comes away disappointed ... Note: this exposure guideline is supported by the EU and the WHO.

(See also Appendix 2: *The Wireless Fairy Tale: how do you sell ... an unhealthy but addictive product.*)

It will not surprise that the ICNIRP members are not scientific researchers, but engineers. Although they claim that there is no conflict of interest within their organization, the Italian court in Turin rejected ICNIRP on January 13, 2020, due to proven ties with and financial dependence on the telecom industry, as a reliable and independent expert.[10]

Professor Dr. Ir. Hans Kromhout, professor at Utrecht University and former chairman of the now disbanded Electromagnetic Fields (EMF) Committee of the Health Council, openly criticized ICNIRP in an interview with *De Telegraaf* in March 2020: "It is a bit of an opaque club. How candidates are elected is not clear. Call it self-tainting. It does not really have an independent status."

About the exposure limit, Kromhout said: "If you see that below the level of one degree heating, all kinds of effects still occur, you have to go a step further." In that same interview, then ICNIRP vice-chairman Eric van Rongen said that ICNIRP "does not have to account to governments, for example" and that the appointment of new ICNIRP

members "happens internally."[11] Van Rongen, like Kromhout, was also a member of the EMF committee of the Health Council. Remember these names, because you will encounter them often later on. Both gentlemen retired shortly thereafter, but play an important role in this story.

The makers of the French documentary 5G: *l'onde d'un doute* (5G: the wave of doubt) from 2020 scrutinized the CVs of fourteen ICNIRP members. What turns out? Seventy percent of them have conflicts of interest. For example, the Italian Guglielmo D'Inzeo was scientific advisor to Vodafone for two years and the laboratory of the Australian Rodney Croft received 165,000 euros from the Electric Power Research Institute (EPRI) between 2012 and 2015, an American institute of the telecom lobby.

In the documentary, Eric van Rongen is also interviewed. Van Rongen, who at the time was not only vice-chairman of ICNIRP, but also secretary of the Health Council and member of the International EMF project of the WHO that assesses the health effects of exposure to radiation, denies having ties with the telecom industry. Yet he was vice-chairman of the Association de Biology Electromagnetique, which is partly funded by the telecom industry.

After some insistence from the interviewer whether that also applies to ICNIRP, Van Rongen says: "They fund our meetings, but not our organization." To the explicit question whether Van Rongen refers to funding by the telecom industry, he answers: "Yes, in fact, yes."[12]

Former MEPs Klaus Buchner and the late Michelle Rivasi of The Greens/Free European Alliance published in the summer of 2020 the highly critical report *The ICNIRP: Conflicts of interest, corporate capture and the push for 5G* in which they clearly demonstrate that many ICNIRP members have ties with the telecom industry, whereby "lack of medical and scientific expertise could lead to tunnel vision."

The report describes the working methods of the 45 members of ICNIRP and of their scientific expert group and concludes that ICNIRP is a scientifically biased organization with ties to the telecom sector:

"ICNIRP consists of a close-knit circle of like-minded scientists, who are represented in all relevant institutions, including the WHO, and who categorically reject all studies with evidence of DNA damage."[13]

Although the report appeared in English, French and German, there was very little response from the EU. Rivasi put her finger on the sore spot as early as 2014 when she said in the documentary *An Invisible Threat – are microwave radiation waves killing us?:* "The European Commission is concerned with doing business and not with protecting health. There is so much money involved that they have to say that there are no health risks."[14]

The report by Buchner and Rivasi is one of the many critical documents that have appeared in recent decades.[15]

Similar findings emerge in the publication *Self-referencing authorships behind the ICNIRP 2020 radiation protection guidelines* from June 2022 in which two Norwegian ICT scientists unequivocally conclude that "the ICNIRP guidelines provide no basis for good governance."[16]

From the International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF) a similar sound is heard in October 2022: "25 years of extensive research shows that the assumptions underlying the exposure limits of ICNIRP are invalid and still pose a danger to public health."[17]

Also the report *Who is entitled to interpret the risks of mobile phone radiation?* published on March 2, 2023 on the German website diagnose:funk paints a devastating picture of the way in which the industry manipulates the research results and ICNIRP misleads us.[18]

Dr. James C. Lin was a member of ICNIRP from 2004 to 2016, serving as chairman from 2008 to 2012. So you would expect him to endorse the exposure guideline. However, nothing could be further from the truth.

This is evident from the report *RF Health Safety Limits and Recommendations* published in 2023 in which Lin concludes: "The ICNIRP guideline does not sufficiently address conclusions of scientific organizations. The recommended exposure limit is questionable from the point of view of scientific justification for safety and public health protection."[19]

In the article *Health and safety practices and policies concerning human exposure to RF/microwave radiation* published in July 2025, Lin again criticizes the existing exposure limits: the excessive emphasis on heating; the rejection of biological effects; the collaboration between ICNIRP and the WHO and the shortcomings in a WHO study from September 2024.[20]



Chapter 5

What Does Science Say?

Warning Signals from Scientists

The position of the Knowledge Platform Electromagnetic Fields (KPEMV) established by the government for citizens with questions and concerns about radiation is as follows:

"In exposure to transmission signals that are lower than the exposure limits, no evidence has been found in scientific studies for possible health effects. Those studies looked at the possible occurrence of brain tumors and damage to DNA. Effects on senses, brain, nervous system, heart and blood vessels, hormones, the immune system, fertility and effects during pregnancy were also examined."

Although the Health Council also impresses upon us that there is no evidence that the electromagnetic radiation from mobile devices is harmful, we do not have to search very far to find out that there are many scientists worldwide who, despite the 'protective' ICNIRP exposure guideline, are indeed concerned about the health risks.

This is evident from the *International Scientist Appeal*: a call addressed to the WHO and the UN in 2015 from a group of 250 international scientists, led by the late Dr. Martin Blank of Columbia University in New York.

The scientists state that through animal and cell studies it has now been convincingly demonstrated that radiation is harmful and that it is therefore necessary to take precautionary measures and to better protect the population.

"We are scientists engaged in biological and health effects of electromagnetic fields (EMF). Based on peer-reviewed, published research, we have serious concerns about the ubiquitous and increasing exposure to EMF."[1]

Clear language, but who should we believe now?

In an attempt to get an answer to that question, the Swedish Mona Nilsson, investigative journalist and founder of the Swedish Radiation Protection Foundation, addressed one of the ICNIRP representatives there during a symposium of the Swedish Radiation Safety Authority in 2016: yes ... Eric van Rongen.

Nilsson asked him point-blank: "Why can you, unlike the hundreds of scientists of the EMF Appeal, draw no clear conclusions about the harmfulness of electromagnetic radiation? Why should the Swedish population and Swedish policymakers believe you and not this group of scientists?"

Van Rongen's astounding answer was literally: "That is difficult to say. Everyone can believe what they want. If those scientists think there is enough evidence, then that conclusion is their responsibility. We draw different conclusions. And it is up to the people to decide which group they find more reliable and what they want to believe."[2]

It would be a misconception to assume that the *International Scientist Appeal* is the only scientific document that contradicts the positions of ICNIRP and the Health Council. The Rheinisch-Westfälische Technische Hochschule (RTWH) in Aachen is one of the largest and most renowned technical universities in Germany and Europe.

The internet information platform Electromagnetic Field Portal (EMF-Portal) launched by femu (research center for bio-electromagnetic interaction of this university) contains a – growing – literature database of, at the time of writing, **47,178** scientific studies on the effects of electromagnetic fields. In two-thirds of them, health effects are demonstrated.[3]

Also the Oceania Radiofrequency Scientific Advisory Association (ORSAA – an independent group of academics and scientific researchers from Australia) has a very extensive categorized online database of peer-reviewed studies in the field of electromagnetic radiation.[4]

Nevertheless, one of the things the Health Council consistently uses as a shield is that more research is needed to determine the risks of wireless technologies. According to Joachim Shüz, head of the Environment and Radiation department of the American International Agency for Research on Cancer (IARC, an expert group of the WHO), this is "just a way to push the problem ahead. There has been convincing evidence for decades that there are risks."

Shüz says this in the Spanish documentary *An Invisible Threat – the possible link between microwave technology and health* from 2014, which can be seen on YouTube*.

It is none other than our own Health Council that, in 1975, at the request of the then minister and state secretary of Public Health and Environmental Hygiene (Irene Vorrink and Jo Hendriks) conducted a literature study and issued the report *Advice on the dangers of microwave radiation and the acceptable radiation levels derived from it.*

The conclusions were clear: biological, non-thermal changes at low radiation exposures and many possible health effects in cells, blood, brain, chromosomes and enzymes. With the argument that it 'only concerned outcomes from animal studies,' the then government buried the report in a deep drawer.[5]

Although 1975 is a long time ago, the first study on the health effects of wireless radiation dates back even further.

That was the study *Kurzwellentherapie – die medizinische Anwendung kurzer elektrischen Wellen* from 1932. The German Dr. Erwin Schliephake already discovered then that microwave transmitters can cause insomnia, fatigue and headache.[6]

In 1970, the report *Early Research on the Biological Effects of Microwave Radiation 1940-1960* appeared, containing a telling quote: "Since the beginning of the development of radar at the start of World

* See Chapter 4, source reference 14

War II, researchers began to express concerns about the possible harmful effects of electromagnetic fields on military and industrial personnel."[7]

Anyone searching online for more 'early scientific warnings' will find many studies. Such as the study: *Effect of Microwaves on the Central Nervous System 1965* from Ford Motor Company, which shows that microwave radiation has "numerous harmful biological effects," "particularly on the central nervous system."[8]

Or the research *Biological effects of electromagnetic radiation* from the Defense Intelligence Agency in 1976 which mentions effects such as headache, fatigue, dizziness, irritability, insomnia, depression, anxiety, forgetfulness and lack of concentration.[9]

The conclusion in the study Radiofrequency microwave radiation – biological effects and safety standards from the US Air Force in 1994 is no less reassuring: electromagnetic fields cause changes in the central nervous system and the cardiovascular system.[10]

That the US government has also been aware of these risks for decades is evident from the archive that Zory Glaser, research scientist in the employ of the US government, built up over many decades. In 1971, Glaser had two thousand scientific studies demonstrating the health effects of wireless technology. As of 2024, he had three times as many.[11]

In the report *Biological Effects and Health Risks of Microwave Radiation*, which reports on an international symposium sponsored by the WHO, it emerges that the WHO was also aware in the early seventies of the fact that wireless radiation can cause biological effects.[12]

The article *It is time to assess the impact of global electromagnetic pollution* that appeared at the end of 2018 in the British renowned medical scientific journal *The Lancet*, leaves nothing to be desired in clarity: "A growing body of scientific evidence suggests that prolonged exposure to radiofrequency electromagnetic radiation leads to serious biological and health effects."

Think of changes in brain activity, immune responses, oxidative stress, DNA damage and an increased risk of cancer.

In addition, the Lancet experts label the observed effects on the central nervous system and the increased risk of some neurodegenerative diseases as "a major source of concern." The ICNIRP exposure standard, which as we saw only takes into account tissue heating, is according to these experts "... proven ineffective in preventing biochemical and physiological disruptions."

A Dutch judge ruled at the end of 2020 in a case against the construction of a forty-meter high transmission mast, that "considering all arguments, with reference to scientific literature, it cannot be ruled out that even at a field strength lower than 1 V/m, there are increased health risks."[13]

(More information about the exposure limit in Appendix 1: *Wireless for Dummies – a concise look at how it works.*)

"The millions of cells that make up our body are chatting with each other all day long. The language they use for that consists of chemical hormones and tiny electrical signals in the body," explains the English geologist Dr. David Gee, former member of the European Environment Agency.

Gee is co-author of the report *Late lessons from early warnings* from 2013 which describes how governments always react too late to new environmental problems and discusses the need for precaution.[14]

"In exposure to radiation from mobile phones, the conversation between the cells is disrupted, confused. As a result, all kinds of biological reactions occur. That is a much more advanced and biologically realistic starting point than that microwave-thermal-cooking idea."[15]

"I was pro-technology for a long time and didn't really see the problem," says Professor Kent Chamberlin, affiliated with the University of New Hampshire in electrical and computer engineering. When he joined the *USA New Hampshire Commission on 5G* research and advisory committee in 2019, that position changed radically.

No less than ninety percent of the studies that Chamberlin and his colleagues scrutinized turned out to have found biological effects, even at radiation far below the ICNIRP limit. Since then, it is clear to the professor: “Wireless radiation is harmful. Exposure to electromagnetic radiation causes an increase in free radicals in the body. That leads to chronic inflammation and that can cause arthritis, cancer, diabetes, Alzheimer’s/dementia and other neurodegenerative disorders.”[16]

Fragile Babies/Vulnerable Children

Anyone who is ‘expecting’ lives nine wonderful months on a pink cloud and is filled with a deep sense of responsibility. The beginning of the life of this vulnerable little being lies entirely in our hands and we naturally want to give him or her the best possible start.

We eat and live as healthily as possible and avoid exposure to harmful substances as much as possible. “Boy or girl doesn’t matter to me, as long as it’s healthy,” we say with a blissful expression on our face to anyone who wants to hear it. Once born, we capture everything our sprout does on photo and film.

What many expectant and new parents unfortunately do not realize is that wireless radiation is also a harmful environmental factor. A fetus is very sensitive to it. “As a baby develops, there are one hundred billion nerve cells in the body, all bridging connections, even in the first few months of pregnancy. Disruption of those earliest signals can have serious consequences for later life,” warns Dr. Leo Trasande, associate professor of the Department of Pediatrics at New York University School of Medicine.[17]

Research from the University of Health Sciences in the Turkish capital Ankara showed in 2023 that exposure to mobile phones during pregnancy can cause oxidative stress in umbilical cord blood. That means that an excessive amount of free radicals arises in our body. Free radicals are harmful substances that are released during metabolic processes or due to unhealthy environmental factors. They attack healthy body cells and can damage our genes.

“Therefore, we think it is important for pregnant women to protect themselves and the fetus by using mobile phones as little as possible during pregnancy,” the researchers state.[18]

The conclusion of a French study from 2020 was that more than thirty minutes of calling per day during pregnancy can have a negative influence on the growth of the fetus.[19]

Experts from the Department of Obstetrics, Gynecology and Reproductive Sciences at Yale University School of Medicine in Connecticut determined in 2012 that radiation-exposed pregnant mice had hyperactive offspring. These offspring also behaved more aggressively and had a poorer memory than the offspring of the non-irradiated mother mice.

According to research leader Dr. Hugh Taylor, this is because radiation from mobile phones damages neurons in the prefrontal cortex. This is the part of the brain involved in cognitive and emotional functions, decision-making and planning skills, social behavior and impulse control.[20]

Since children have smaller heads than adults, the distance from the skull to the brain center is also shorter in children. As a result, the radiation from mobile phones penetrates deeper into their brains. The skull slows this down somewhat, but children have a thinner skull wall than we do. Their brains are therefore extra vulnerable. However, the guidelines for exposure to wireless radiation are based on the head of a man weighing 110 kilos.

Children’s brains are enormously plastic and grow and develop rapidly. Scientific animal studies in which the brains were exposed to small amounts of microwaves point to cell damage and death. Disruption of brain development at a young age can cause significant neurological problems later in life.

In addition, a child’s body (including the brains) contains more water than ours. Due to the high electrical conductivity of all that water, wireless radiation moves more intensely through the tissues of the child’s body. When children hold a wireless device against their body, more body parts are also exposed to radiation compared to an adult with the same device.

And children have more active stem cells in their body. These are cells that can develop into different types of cells. Research from 2009 showed that these stem cells often react more strongly to wireless radiation than other cell types. The critical cells responsible for our children's development are thus most influenced by wireless![21]

The American Robert Kennedy Jr. was outspoken in 2024, as Minister of Public Health, during the *Limitless Expo* – a large financial fair in Texas – about the dangers of mobile calling.

He outright accused parties with major interests in the telecom industry and the regulatory agencies of lying about the dangers of radiation. "There are literally tens of thousands of studies showing the extreme dangers of phone radiation. But no one pays attention," he told his interviewer Robert Kiyosaki. "The further you keep your phone away from your head while calling, the better it is for you," he advised.

Kennedy warned that especially children must be protected. "If you have a child, never let him hold his mobile phone near his head. If it's a boy, don't let him carry the phone in one of his pockets. And if it's a girl, don't let her carry her mobile phone in her breast pocket. Don't let her carry the device near her ovaries either."

WHO: Risk of Cancer

Due to an increased risk of a malignant type of brain cancer (*glioma*), an IARC research group consisting of thirty scientists and doctors decided in 2011 to classify the radiation from mobile phones in category 2B: 'possibly carcinogenic to humans.' The same category in which DDT, lead, asbestos, diesel, benzene compounds and the Human papillomavirus (HPV virus) are also listed.[23]

In 2018, the same IARC experts saw sufficient grounds to raise this risk to 'carcinogenic' (category 1): "In combination with recent animal experimental evidence, the recent epidemiological studies strengthen and support the conclusion that this radiation should be categorized as carcinogenic to humans," they stated.

It is easy to guess that the members of ICNIRP were not waiting for that. So what happened? ICNIRP published a document in 2020 with the simple conclusion "no evidence of cancer" and the WHO subsequently joined in. Could that have something to do with the fact that the then vice-chairman of ICNIRP, Eric van Rongen, was also a member of the International EMF project of the WHO that assesses the health effects of exposure to radiation?

However, that evidence does exist! During part of the Cold War (from 1953 to 1976), a little five thousand employees of the American embassy in Moscow were secretly eavesdropped on by means of the 'Moscow Signal.' In doing so, staff were exposed to microwaves between 2.5 and 4.1 gigahertz (GHz), the frequency band now used for wifi, among other things.

Research from 1998 showed that among the American embassy staff in Moscow, much more leukemia, breast cancer, cancer of the genitals and brain tumors occurred than average.[24] This study was also labeled by ICNIRP as a study that 'provides no evidence' for health risks.

"Two camps have emerged in science, with one group calling from their trench to the other. A normal conversation is no longer possible," Hans Kromhout said at the beginning of 2020 in the Telegraaf article *Science divided over 5G radiation*.[25]

The scientist affiliated with the Health Council and Utrecht University indirectly referred to the squabbling over the research conducted by the National Toxicology Program (NTP) commissioned by the American Food and Drug Administration (FDA). Four thousand scientists from the National Institute of Environmental Health Sciences conducted a twenty-year animal study that was supposed to determine whether wireless 2G and 3G radiation also has non-thermal long-term effects.

On that basis, it would be examined whether the exposure guidelines needed to be adjusted. In 2016, it turned out that rats and mice got cancer as a result of exposure to phone radiation. "Our study was groundbreaking," says lead researcher Michael Wyde. "We found that increased presence of heart, brain and adrenal tumors arose from radiofrequency radiation."

Kromhout, who notes that "certain groups" are trying to "reason away" that conclusion, considers the NTP research a 'breakthrough': "They are well-conducted studies." Scientists from organizations that determine worldwide up to what level radiation is safe are indeed making desperate attempts to set aside the NTP conclusion.

According to then ICNIRP vice chairman Eric van Rongen, who consistently assumed that radiation is only dangerous because the body heats up from it, the identified tumors can indirectly be caused by heating. Wyde strongly disputes that: "Nonsense, our study shows that the effects do not come from heating of tissue, but from the radiation itself."

NTP announced in 2023 that follow-up studies would be conducted to better understand the long-term effects of the animal studies. Yet the project was discontinued at the beginning of 2024. The short explanation that NTP gave for this only raises more questions: "The research was technically challenging and more resource-intensive than expected. No additional studies on the effects of wireless radiation are planned."[26]

With the aim of finding out the actual reason for this sudden turn, Children's Health Defense (CHD) submitted a request to the National Institute of Health (NIH) in April 2024. The organization founded by Robert F. Kennedy Jr. with the mission "to end the epidemic of chronic conditions in children as a result of exposure to toxic substances," used the Freedom of Information Act.

None of the fourteen response emails that CHD received from the NIH revealed why the research was discontinued and by whom that decision was made.[27]

In March 2024, scientists from the International Agency for Research on Cancer (IARC – the cancer research group of the WHO) in collaboration with a team of international researchers published the results of the study *Mobile phone use and brain tumour risk – COSMOS, a prospective cohort study*.[28]

This large-scale international study examined the mobile phone use of more than 250,000 people and found no link between the use of mobile phones and the risk of brain tumors. However, the research was controversial.

"Given the serious methodological problems with this interim COSMOS document, we advise the authors to retract their conclusion," wrote the International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF) in August 2024, in a message in the scientific journal *Environment International*. The reason for this was, among other things, that the research was partially funded by the telecommunications industry and that the research design was negotiated with Ericsson."[29]

What also did not benefit the reliability of the study was that the research team partly consisted of members of the Dutch Health Council and the International Commission on Non-Ionizing Radiation Protection (ICNIRP – the body that advises on the exposure guideline for radiation).

"We can now be more confident that exposure to radio waves from mobile phones is not associated with an increased risk of brain cancer," Dr. Ken Karipidis of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) told the British newspaper *The Guardian* on September 3, 2024.

He referred to the conclusion of the study *The effect of exposure to radiofrequency fields on cancer risk in the general and occupational population* conducted by him and his research team, commissioned by the WHO. This study would be "the most extensive research to date," which would have definitively shown that there is no relationship between mobile calling and cancer.

The research team would have reviewed 5060 epidemiological studies from the period 1994-2022 for this research. Anyone who takes the trouble to read the study will soon discover that the final conclusion is based on only six of these selected studies. More than 99% of the initial total is ultimately left out of consideration.[30]

Although according to this WHO research there is no link with mobile calling, there have been seven similar large-scale scientific analyses conducted in China, Poland, Sweden, India, America and South Korea since 2016 from which the opposite emerges.[31] Such as the South Korean study *Relationship between radiofrequency electromagnetic radiation from mobile phones and brain tumors* published on October 10, 2024 with the conclusion: there is a clear link between the occurrence of malignant brain tumors and the place where the mobile phone is held against the head.[32]

The South Korean/American meta-analysis *Use of mobile phones and risk of tumors* from 2020 found 'significant evidence' that the use of mobile phones is linked to an increased tumor risk.[33]

Lead author is the researcher Dr. Joel Moskowitz affiliated with the University of California in Berkeley, who has been researching the adverse health effects of radiation from wireless technologies since 2009. In the ongoing blog *Biased WHO review claims no cancer link for mobile phone use* on his website saferemr.com, Moskowitz calls the claims of Karipidis on September 16, 2024 'highly irresponsible.'

On September 3, 2024, he writes: "In my professional opinion, the WHO has selected scientists who had demonstrated their bias through previous publications by either finding no evidence of harm, or rejecting all evidence they found."[34]

Remarkably, the literature study *Effects of exposure to radiofrequency electromagnetic fields on cancer in laboratory animal studies* financed in part by the WHO appeared on April 25, 2025. This research scrutinized 52 animal studies and then concluded that there is 'a high degree of certainty' between mobile calling and the occurrence of malignant brain tumors and rare malignant tumors in the heart.

The link between mobile calling and the occurrence of rare liver and adrenal tumors was established with 'moderate certainty' and some of the studies showed a 'possible but inconsistent risk' of lymph node cancer. The fact that such tumor types have also been observed in previous similar scientific studies with humans, the scientists

considered as a confirmation of their findings: "Strong evidence for cancer in experimental animals is relevant for the identification of a carcinogenic hazard to humans."[35]

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), which conducted the WHO research from September 2024, was *not amused* and posted a press release on its own website in May 2025: "Research on experimental animals and cancer provides no reason to change ARPANSA's assessment of the safety of wireless technology."[36]

By way of motivation, it was stated, among other things, that this study would only be based on two studies, including the above-described, fiercely disputed, NTP project.

You might expect that the Ministries of Public Health, Welfare and Sport (VWS) and Economic Affairs (EZ) and various advisory bodies of the government would see reason in this last-mentioned WHO research to reconsider the current advice and policy regarding electromagnetic fields. However, nothing could be further from the truth. VWS referred to "the colleagues at the RIVM," but they turned out not to have read the research.

The Ministry of Economic Affairs indicated that it relies on the knowledge and advice of the RIVM, the Health Council and the Knowledge Platform Electromagnetic Fields (KPEMV) and advised to contact the Health Council. The Health Council had "not issued any advice on the aforementioned subject about which we can explain anything."

The GGD referred to the KPEMV. The KPEMV stated that it does not play a role in the development of policy, does not conduct health research itself and is not an advisor to the national government. Adding that epidemiological research provides indications for a possible correlation between calling a lot with a mobile phone against the head and certain types of brain tumors, "but in recent research (COSMOS – 2024) these indications have not been confirmed, by the way."[37,38]

Increasingly Allergic Asthma

"When I was a child, it was extremely rare to find a child with some form of allergy. Nowadays, more than fifty percent of Swedish children under fourteen suffer from allergic asthma," the retired professor and Nobel Prize winner Dr. Olle Johansson told in a video interview at the end of 2024.

Johansson worked for decades as associate professor and head of the Experimental Dermatology Unit, Department of Neuroscience, at the Karolinska Institute in Stockholm and is a world-leading authority in the field of wireless radiation and health effects.

"If the body cells involved in this form of asthma are exposed to the radiation from mobile phones, they react in the same way as they would after exposure to pollen, nickel or another allergen," he explains. "That has been established in many studies. A Japanese researcher has shown that eczema worsens when exposed to radiation from mobile phones."[39]

Mobile Calling with a Surgical Knife?!

That specialists in the field of DNA repair are totally unaware of or interested in the fact that mobile phones and other wireless devices damage or disrupt the genetic material of cells is, according to Johansson, enormously frightening.

"Scientists in this research field previously used aggressive chemicals to damage test DNA, in order to then repair it using various molecules, including melatonin. Dissatisfied with this aggressive method, there has been a years-long search for a 'non-invasive surgical knife' to damage the test DNA with. Eventually, the 'ideal' solution was found: the mobile phone."

In other words: the same device that governments and the telecom sector claim would not be capable of damaging our DNA is used in laboratories as a surgical knife.

"That is dramatic," Johansson thinks, "and I understand that insurance companies don't want to burn their fingers on this."[40]

(That this is indeed the case, you can read in chapter 6 under *Cautious Insurers*.)

"Does living near a transmission mast affect health?" This question is central to the Indian-Australian study *A greater prevalence of symptoms related to higher exposure to mobile phone base stations in a hilly, densely populated city in Mizoram, India* published in June 2025.

The research focuses on the health symptoms and exposure levels of 183 adults living within 300 meters of a transmission mast. Compared to the control group living at greater distance from transmission masts, the research group turned out to have more frequent and severe effects in four areas:

(1) Mood-Energy: anxiety, excitement, increased irritability, fatigue, sleep problems, dizziness;

(2) Cognitive-Sensory: concentration problems, memory problems, disruption of problem-solving ability, eye and ear problems, skin problems, abnormal sensations;

(3) Inflammation: headache, allergy, increased infections, weight problems, chest pain, irregular heartbeat;

(4) Anatomical: muscle problems, nerve pain, digestive problems, joint pain, loss of appetite, nausea.

Highly exposed people under forty years old also reported more infections and allergies, which may indicate a link between prolonged exposure and a stressed or impaired immune system.[41]

All this is just a very small tip of a huge scientific iceberg. Note: ICNIRP itself is also aware that besides tissue heating there are other effects, but ignores that fact. Eric van Rongen admits this in the French documentary 5G: *l'onde d'un doute* (5G: the wave of doubt) from 2020 when he says: "ICNIRP is aware of biological effects but has never considered recognizing them."[42]

Who Pays, Determines

Would you trust research that shows that smoking causes no health damage if the client and financier of this research is the tobacco industry itself? No, surely not! Scientist Henry Lai of the University of Washington put it to the test and examined from over a hundred studies on the health effects of wireless radiation whether it made a difference in outcome whether they were funded by the telecom sector or not.

The outcome is predictable and at the same time disturbing: the results of both research groups (independent versus funded) are more or less opposite. In seventy percent of the independently conducted studies, harmful health effects were demonstrated compared to one third of the researchers paid by the industry.

Of the latter, a large majority showed no effects. Yet, in that group, one third did indeed do so. Despite the steadfast 'no-evidence' mantra, it emerges even from a part of the research funded by the telecom industry that, besides heating, there are indeed biological health effects. In fact, there is thus between 32 and 70% chance of harmful health effects other than heating. A rather disturbing outcome![43]

Division Calls for Precaution

Lai's research unequivocally shows that it is not so much that there would be 'no evidence.' There is clearly division and discussion among scientists. Something that in scientific circles is very common and calls for precaution. The precautionary principle is a legal and political guideline that is laid down by law.

It boils down to governments in new situations or with new technological developments having to take such measures that possible damage to humans and the environment is prevented. Even if scientific research has (yet) not established the possible risks with 100% certainty.[44]

By sticking to the heating story and ignoring all other health risks, the need to take precautionary measures is however set aside. In 2013, Professor Erik Lebret, affiliated with the Knowledge Platform Electromagnetic Fields (KPEMV) established by the government, stated in the Zembla episode *Sick from your mobile* that there would be no irrefutable evidence that mobile calling leads to harmful health effects and that the Dutch government, for fear of unnecessary unrest among the population, takes no precautionary measures: "If you know so little about it, you make people unnecessarily worried if you actively start spreading information from precaution."

Risk researcher Dr. Jeroen van der Sluijs of Utrecht University disagrees with that: "As a citizen, I would rather be in panic if the government systematically ignores warnings and does not take the health of the population seriously."[45]

Our government may be of the opinion that applying the precautionary principle is not relevant, according to article 191 of the Treaty of Europe, the Netherlands is indeed obliged to adhere to the precautionary principle. That is confirmed by the Ministry of Economic Affairs and Climate, through the Antenna Bureau.

The Health Council also wrote in 2008 that the precautionary principle must be applied when there is a plausible risk "... if at least some recognized experts in the relevant field are concerned about that threat."

In a number of countries around us, a completely different position is taken. There, not only a lower exposure limit is applied, the population is also given tips on how to reduce exposure to radiation. In Israel, it is even legally required that both mobile phones and the commercials about them contain a warning that the radiation emitted by such equipment is harmful to health, especially for children.

The National Committee for Environment and Children's Health of the Cypriot government made a short information video in 2015. It advises, among other things, to reduce children's exposure to wireless equipment, not to put phones in the bedroom or carry them on the body, to turn off the wifi when not in use and not to call in the car, bus, tram, train or elevator.

"Daily exposure to electromagnetic radiation carries risks," warns Dr. Maro Solomou of the Cyprus Paediatric Society in the video. "Therefore, do not give wireless equipment to children under fourteen years old." [46]

Lies from Telecom Lobbyists

"This study is fake, radiation from mobile phones causes no tumors," the German Professor Alexander Lerchl proclaimed several times between 2008 and 2021 in the media. The scientist, who led a study funded by the Federal Office for Radiation Protection (BfS) of the German government on the effects of 5G on human cells, referred with his falsity claims to the European REFLEX research.

Lerchl managed to rake in a sloppy five million euros by closing research contracts with the BfS. That made him the best-funded radiation researcher in Germany, Europe and probably the world. The disputed REFLEX study was conducted in 2004 commissioned by the EU by twelve research institutes and had as outcome that the radiation from many mobile phones causes damage in human cells and DNA.

The prolonged radiation from a mobile phone and from electromagnetic fields turned out to cause comparable genetic damage as X-ray radiation.[47]

After a long legal battle between Lerchl and the REFLEX researchers, the judge of the German court in Bremen ruled at the beginning of 2021 that the conclusion of the REFLEX study was indeed sufficiently substantiated. So it turned out to be Lerchl himself who was guilty of spreading false claims and he had to stop that immediately, on penalty of a fine of up to € 250,000 or six months imprisonment.[48]

That the telecom lobby has more up its sleeve than publishing substandard studies or unfounded accusations emerges in *Generation Zapped*: a revealing documentary from 2017 by the American Sabine el Gemayel.[49]

In the early nineties, it seemed a good move to Tom Wheeler, then chairman of the telecom industry association Cellular

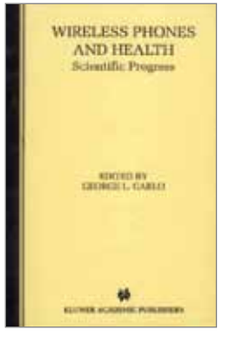
Telecommunications and Internet Association (CTIA), to hire a scientist who could help rid the telecom sector of harmful rumors once and for all. The occasion was a lawsuit about a mobile phone that allegedly caused a fatal brain tumor.

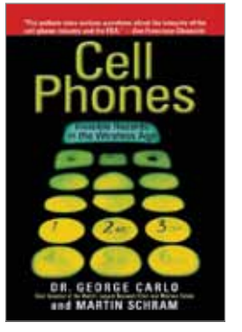
Lawyer and epidemiologist George Carlo, who had previously successfully conducted studies for other controversial industries, began in 1995 on the promising *Wireless Technology Research* project (WTR): with a budget of nearly thirty million dollars one of the best funded researches into the safety of mobile phones.

Four years and many studies later, Carlo could only conclude that there were serious questions about the safety of mobile phones: "The risk of rare tumors on the outside of the brain was more than doubled in mobile phone users."

There was a clear "correlation between brain tumors occurring on the right side of the head and the use of the phone on the right side of the head" and "the ability of a phone to cause functional genetic damage" was "absolutely certain." Carlo urged the telecom industry to stop "repeatedly and wrongly claiming that wireless phones are safe for consumers," but Wheeler questioned the quality of the WTR research. The whistleblower was relieved of his position and his scientific career was over.

Shortly thereafter, his house burned to the ground. Investigation pointed to arson. The perpetrator was never found. Carlo found a position at a law firm that litigates against the telecom industry and published in 2001 the revealing book *Cell Phones: Invisible Hazards in the Wireless Age: An Insider's Alarming Discoveries About Brain Cancer and Genetic Damage**.[50]





The years after, his second book *Wireless Phones and Health – Scientific Progress – vol. I and II*** appeared in which he sets out the impossibility of proving the absolute safety of wireless technology and describes how the rapid development of this technology hinders an effective evaluation

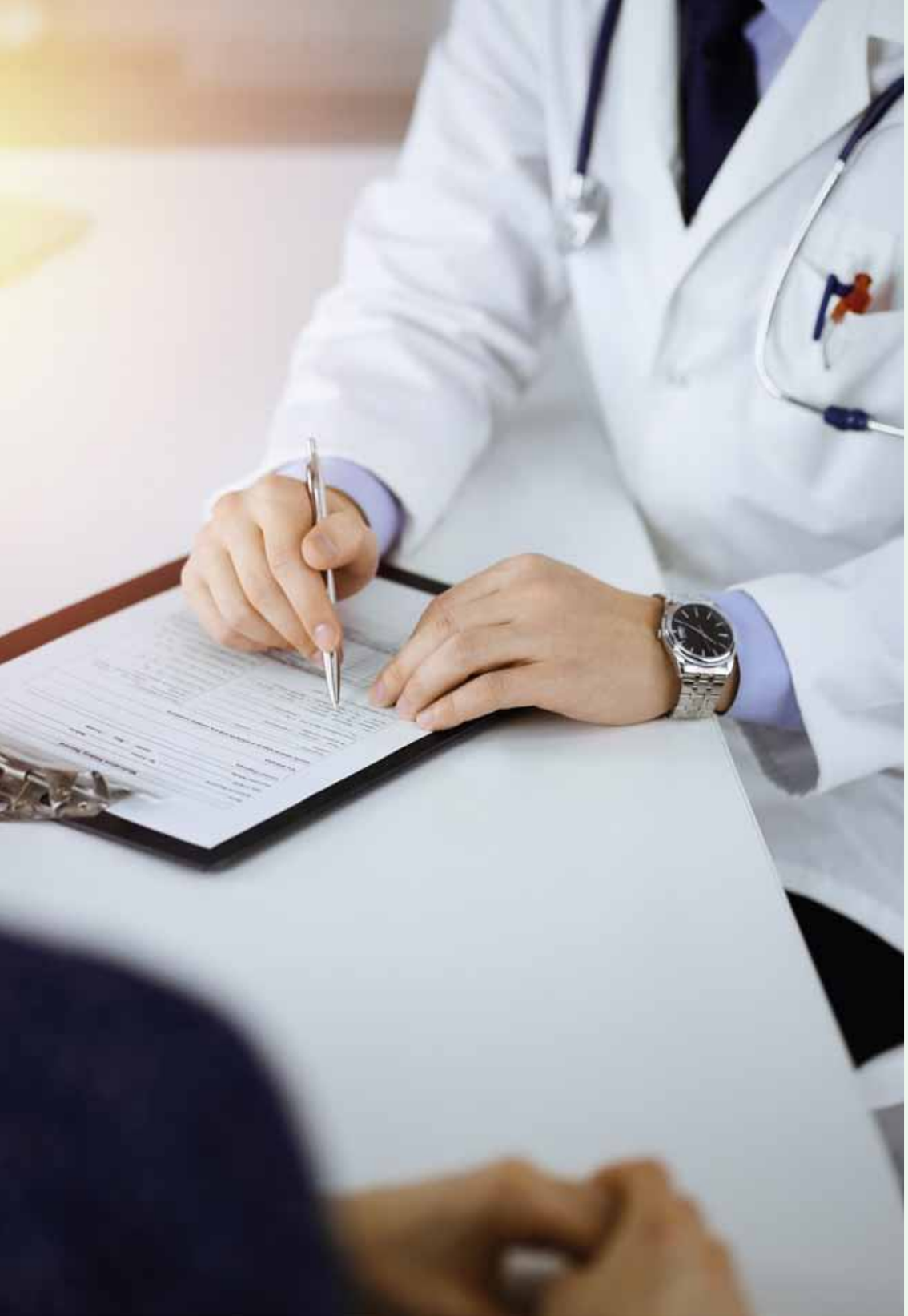
* published by Basic Books, USA, 2002, ISBN: 9780786709601
** published by Springer, 2013, ISBN: 9781475771060

of health risks and requires continuous monitoring.[51] Also in the book *Cellular Telephone Russian Roulette*[52] from 2002 clear language sounds: “Today we know that even single exposure to EMF causes damage to the DNA of brain cells.”

Author Robert C. Kane, who until he died of a brain tumor, was a Motorola engineer, lets a powerful warning be heard in the book: “Never before in human history has there been such a practice as now with the marketing and distributing of products that are harmful to the human biological system by an industry with foreknowledge of those effects.”

Supported by a decades-long, undiminished powerful industrial lobby, the telecom sector has nevertheless managed to develop into one of the largest and fastest growing billion-dollar industries in the world.

FOTO?



Chapter 6

Experts Sound the Alarm

Cautious Insurers

Professor Hans Kromhout, emeritus professor at the university of Utrecht and former chairman of the Electromagnetic Fields (EMF) Committee of the Health Council, said in a Health Council news release on August 25, 2022: “Frequent use of mobile phones carries health risks such as poor sleep, addiction problems and serious traffic accidents, but exposure to radiofrequency radiation is, as far as we know now, no reason to worry. It is not the new asbestos, as some people think.”[1]

According to the reports *Late Lessons from Early Warnings – the precautionary principle 1896-2000* and *Late Lessons from Early Warnings – science, precaution, innovation* compiled in 2001 and 2013 by scientists from the European Environment Agency in Copenhagen, the way the asbestos issue has been approached since the beginning of the twentieth century does in main lines indeed strongly resemble the way scientific publications about electromagnetic fields (EMF) and the many resulting health warnings from scientists and doctors have been dealt with since the mid-1920s of the twentieth century.[2,3]

As early as 1930, the government knew that asbestos had deadly effects. It then took until 1993 (!) before this was officially recognized in the Netherlands. The ban on asbestos was only implemented in the entire EU in 2005. Thus, history shows many examples of ‘safely assumed’ achievements that later turned out to have disastrous consequences.

The point here is: if the government calls something 'safe', it doesn't have to be so. It is especially important to use your own common sense.

Insurance companies are equally uneasy: "The comparison of asbestos with EMF is obvious. If it is proven that EMF causes cancer, the injuries may only become clear many years after exposure. The danger with EMF is that, just like with asbestos, the exposure of insured persons is underestimated and can grow exponentially", wrote insurance company Lloyd's of London in 2010 in the report *Electro-Magnetic Fields From Mobile Phones: Recent Developments*.

Not entirely unfounded, as is also evident from a study financed in 2009 by the Austrian social insurance company Allgemeine Unfallversicherungsanstalt (AUVA) entitled *Research into non-thermal effects of EMF in mobile communication* (ATHEM).

The report shows irrefutable biological effects and health risks of wireless technology: influence on the brain, on the immune system and on protein synthesis.

The Swiss insurance company Swiss Reinsurance Company Ltd took the safe approach in 2013 and decided to place the 'unforeseen consequences of EMF' in the category 'high risk' where hormone-disrupting chemicals and the unforeseen consequences of nanotechnology are also located.[4,5,6]

Alarmed Shareholders

A glance at the annual reports for telecom shareholders makes it clear that this is far from exaggerated. While the majority of the unsuspecting telecom customers assume that everything is fine, all providers appear to have been warning their investors for years about the possible 'settlements or damage claims' as a result of 'a significant number of ongoing lawsuits': "... no guarantee can be given that future studies will not suggest a link between electromagnetic fields from mobile devices and adverse health effects."

One cannot rule out "that future changes in regulation or in exposure limits could have a material adverse effect, for example through reduced demand for mobile networks or greater problems in obtaining locations for base stations". The addition that there are "no significant insurances regarding these matters" available will surprise no one.[7]

Alarm Signals from Doctors

We all know it: there is more and more radiation around us and that radiation is also becoming stronger and stronger. With that, it is expected that the number of people with health complaints from radiation from mobile communication technologies will increase and more and more people with radiation complaints will knock on their family doctor's door.

Government consumer research from 2016 showed that at that time three percent of the population (540,000 Dutch people) had such complaints.[8]

In a EenVandaag broadcast from 2018, psychologist Fred Woudenberg (head of Living Environment at GGD Amsterdam) spoke of five percent (900,000 Dutch people).[9]

So it is good that the European Parliament in 2009 adopted the resolution *Health Risks Associated with Electromagnetic Fields* (EMF) in which the member states were advised, among other things, to provide citizens with information about the possible health risks of radiation.[10]

However, action from the Dutch Health Council failed to materialize. This in contrast to the French Health Council L'Afsset (Agence Française de Sécurité Sanitaire de l'Environnement et du Travail – a government institution for the safety of the population in the field of health and working conditions) which responded to the EU resolution by calling on the French government to drastically limit exposure to electromagnetic fields, due to the scientific uncertainty about the consequences.

Despite the EU resolution, in the Netherlands most doctors according to the now retired Breda family doctor Liesbeth Adriaansens are totally unaware of the existence of something like 'electro-stress'.[11]

Not so strange if you consider that on Dutch medical training programs no attention at all is paid to this subject and there is also no post- or continuing education for medical professionals in this area.

The only information that the Dutch government has provided to doctors dates from 2012: a 'knowledge letter' from the Knowledge Platform Electromagnetic Fields (KPEMV) regarding patients with health complaints as a result of electromagnetic fields.

In that document, it is stated among other things: "You can assume the three possible explanations that exist for the health complaints: the complaints are caused by electromagnetic fields; the complaints have a psychological cause; the complaints are caused by other environmental factors or diseases. A combination of the above factors is also possible."[12]

That doctors themselves are anything but reassured by this is evident from the many emergency signals that have been sounding from medical professionals worldwide since the beginning of the 21st century.

The first group to raise the alarm about this consisted of more than a thousand German doctors who in 2002 felt compelled to launch the *Freiburger Appeal*: a call in which the doctors describe the connection between electrosmog and a number of disease patterns:[13]

"Our treatments are increasingly unsuccessful, because the constant exposure to radiation prevents healing. We feel obliged to make these observations public especially since official bodies consider the danger of radiation as 'purely hypothetical'."

In addition, according to this group of German doctors, completely different health effects occur than mere warming:

"In our patients, we have observed in recent years a dramatic increase in severe and chronic conditions, such as:

* learning, concentration and behavioral disorders in children (for example hyperactivity)
* blood pressure abnormalities that are increasingly difficult to influence with medications
* heart rhythm disorders · heart attacks and strokes in increasingly younger people
* brain-degenerative diseases (for example Alzheimer's disease) and epilepsy
* cancer such as leukemia and brain tumors"

And:

"We also observe an increasingly frequent occurrence of various, often wrongly diagnosed in patients as psychosomatic disturbance symptoms, such as for example:

* headache and migraine
* chronic fatigue
* inner unrest
* sleeplessness and daytime fatigue
* ear ringing
* susceptibility to infections
* nerve and other pains without clear cause."

The doctors involved emphasize that they rule out a purely coincidental coincidence of circumstances and that they are almost certain that all this has to do with radiation:

"Since we generally know the living environment and habits of our patients, we see more and more a clear connection between the occurrence of these diseases and radiation exposure:

* too often we observe a striking accumulation of certain diseases in radiation-exposed areas or residential units

* too often the disease improves or months- to years-long complaints disappear in relatively short time after reduction or removal of a radiation exposure in the patient's environment

* too often building-biological measurements also confirm extraordinary electromagnetic radiation intensities on site of our findings."

The *Freiburger Appeal* does not stand alone. In the years that followed, many doctors, medical experts and health professionals from all over the world have voiced a similar sound:

In 2004, 130 German pediatricians raised the alarm in the *Bamberger Appeal*: "Public health is severely at stake due to the increasingly intense radiation", they state.[14]

In 2009, *Medisch Contact* (professional journal for Dutch doctors and health workers) published a letter to the editor from two Dutch doctors. In the letter, heavy criticism was expressed on the Electromagnetic Fields Committee of the Health Council.[15]

That same year, a group of 50 Dutch medical professionals, family doctors, specialists and medical scientists signed the *Medical Appeal Radiation Risks.*

The signatories called for independent scientific long-term research, reduction of the population's exposure to electromagnetic fields and a more conscious handling of wireless technology.[16]

Between 2009 and 2017, various doctors and health experts in the US and Canada wrote many letters to schools to warn about the risks of wireless technology for children.[17]

The *Freiburger Appeal* described above from 2002 was in 2012 updated based on new scientific findings. At the publication on March 1, 2013, nearly three thousand doctors had signed the document.

In 2012, the Austrian Medical Chamber (ÖAK), the interest organization of Austrian doctors, issued a guideline for the diagnosis and treatment of health complaints in connection with electromagnetic fields. The guideline recommends an exposure limit that is 10,000 times lower than the current exposure limit (which is also used in the Netherlands).[18]

The national organization of pediatricians American Academy of Pediatrics (AAP) also called in 2012 to revise the exposure limits. "Children are disproportionately affected by all environmental exposure, including cell phone radiation", according to AAP director Dr. Robert Block.[19]

In 2016, a group of American doctors and health professionals founded the organization Physicians for Safe Technology (Doctors for Safe Technology), among other things with the aim of "preventing acute and chronic diseases by fostering understanding of the connection between public, psychosocial and ecological health effects of the use of modern technology."[20]

At the end of 2017, more than 180 scientists and doctors from 36 countries sent a call to the EU, in which they warned about the health risks of radiation and called to refrain from 5G.[21]

At the end of 2018, scientists stated in the leading medical-scientific journal *The Lancet* clearly that it was time to assess the impact of global radiation exposure because "more and more scientific evidence shows that long-term exposure has serious health effects".[22]

In 2019, more than 100,000 people and organizations, including many doctors, worldwide signed the *5G-Space Appeal* in which a call was made to stop 5G on earth and in space. That same year, a number of concerned Belgian doctors founded the *Hippocrates Electrosmog Appeal*, in which they asked the various governments "to apply the precautionary principle to protect the population, in particular the most vulnerable groups such as pregnant women and children".[23]

In October 2019, German doctors even took to the streets to protest against 5G and to stand up for people who as a result of radiation experience health complaints (such as for example tinnitus and heart rhythm disorders).[24]

On April 6, 2020, a group of German doctors and psychotherapists sent an open letter to then Chancellor Angela Merkel. In the letter, attention was drawn to the connection between 'exposure to radiation, immunodeficiency and global epidemic', with a call to drastically reduce global exposure.[25]

The Dutch Doctors Association Integrative Medicine (AVIG) sent in May 2020 a press release/letter in which it indicated to be very concerned about the rollout of 5G and called not to roll out 5G as long as there is no independent evidence for the safety of 5G radiation.[26]

That same month, a Dutch surgeon/oncologist declared to be of the opinion that doctors should be more open to radiation issues and that also the Dutch doctors' organizations may "make a stronger sound" about the negative effects of electromagnetic radiation. The oncologist emphasized among other things that electromagnetic radiation influences cell division and can disrupt the repair of errors in cell division.[27]

The French doctor Marc Arazi published in 2020 a book with the disturbing title *PHONEGATE – Overexposed and deceived: What the cell phone industry doesn't want you to know.*[28]

In August 2020, a Dutch family doctor, in consultation with Foundation Stop5GNL, launched the *5G Manifesto of Dutch doctors*:

"We, the undersigned Dutch doctors, are concerned about the rollout of the 5G network in the Netherlands. Not only about our privacy, also about the environment, our health and that of our patients. [...] Therefore, we ask the responsible ministers to reverse the rollout of 5G until thorough independent scientific research has been done into the (long-term) effects of 5G on public health, thus in accordance with the precautionary principle, and thus to protect the people, in particular vulnerable groups, such as children, pregnant women, elderly and chronically ill, against health risks of radiation."[29]

In June 2020, Swiss doctors for environmental protection (AefU) published a report in which they stated: "The development of mobile telephony concerns us, doctors for environmental protection (AefU). Our Working Group Electromagnetic Fields and Health has been following studies on the influence of non-ionizing radiation (NIS) on health for years. We maintain contacts with researchers and authorities."

The AefU project Environmental Medical Advisory Network established in 2008 advocates for precaution, lower limit values, continuous research and information about the risks of mobile communication.[30]

That same month, more than three and a half thousand medical experts and health workers worldwide expressed their concern about the health effects of the increasing exposure to radiation.

In a press release, they stated that they are particularly concerned about the radiation from mobile telephony, wifi and 5G. Some risks they mentioned are: cancer, cellular stress, increase in harmful free radicals, DNA damage, structural and functional changes of the reproductive system, learning and memory disorders and neurological disorders.[31]

Signals from the Telecom Sector: 'Signal Safe'?

When companies like KPN, Vodafone Ziggo or Odido are asked if their wireless products may be harmful to health, that yields answers like: "We follow the government and independent scientific institutes such as the Health Council, the RIVM, the RDI and the Knowledge Platform EMV" (KPN); "According to the Health Council and the RIVM, there is no scientific evidence that mobile telecommunications below the exposure limit is bad for your health"32 (Odido); "Radiation is not harmful to you as long as it stays within the norm."[33] (Vodafone Ziggo).

From telecom industry organization Monet, a similar sound is heard: "International (long-term) scientific studies show that to date no relationship can be established between electromagnetic fields caused by mobile communication and the occurrence of health effects."[34]

Former chairman of Microsoft in Canada Frank Clegg thinks however significantly differently about it. He worked more than forty years in the telecom sector and is very outspoken about the risks of wireless technologies.

In a video message from 2021, he says: "I have seen the enormous benefits that this technology can offer. I have also seen the potential harm if it is not implemented correctly. And I believe that our current implementation of wireless technology is not safe."

Therefore, Clegg, together with a group of scientists, citizens and parents, founded the organization Canadians for Safe Technologies. In addition, he has joined the Advisory Group of the American interest organization Environmental Health Trust.[35,36]

"I am especially concerned about the rollout of 5G. The more research I do, the more experts I speak to, the more concerned I become. I am not aware of any research or study, by my sector or a related industry, that has anything to do with health or safety effects of wireless technology."

Clegg indicates that he is also not aware of even one single study that shows that 5G is safe. The list of consequences of wireless radiation that Clegg then lists is not mild: "Insomnia, headaches, fatigue, palpitations and heart rhythm disorders, infertility, ear ringing, numbness or tingling in the limbs, diabetes, cancer and permanent DNA damage. But also: anxiety, depression, ADHD and autism, mood swings and emotional instability."

The former Microsoft CEO finds it reprehensible that regulatory bodies like the American Federal Communications Commission (FCC) consist only of former telecom managers, lawyers and engineers. "We have ended up in a kind of 'wild west scenario'", he states.[37]

The Dutch former telecom and IT entrepreneur Dolf Zantinge also lets a strong counter-sound be heard. Zantinge specializes in telecommunications, artificial intelligence, data mining and fiber optics. "The scientific answer to the research question whether you can change the DNA with electromagnetic waves is: yes. And what do we do: immerse the whole world in electromagnetic fields. Electromagnetic waves can have a far-reaching effect on the planet and on almost all biological systems. It is mainly the governments, business and security services that invest billions in 5G. There are enough questions where no research has ever been done", he warns.[38]

Former KPN project coordinator engineer Jolanda van den Berg published early 2025 the book *Uncontrolled Irradiated – health problems due to 5G not monitored*, in which she paints a worrying picture of the way authorities deal with the risks of radiation.

Van den Berg wrote the book after she in March 2024 had participated in the government course *Everything about Antennas* which is organized four times a year for municipal officials and other involved parties from the field. Topics include 5G, a look ahead to 6G, research into health and electromagnetic radiation and the latest news and jurisprudence about the placement of antennas. During the course, Van den Berg encountered so many shortcomings and dubious arguments that she decided to make her findings public.[39]

Podcaster and former Talpa TV presenter Margje Teeuwen invited Van den Berg for a conversation.[40]

Engineer in electrical and telecommunications engineering Waldy Kivits, owner of Kivits Research, Development & Solutions in Waalwijk, worked 27 years in the telecom sector. He participated in March 2025 in the antenna course and also has his reservations.

"The participants are reassured to make it as easy as possible for telecom providers, but health risks are approached in an incorrect way", he thinks. "Although there are many peer reviewed studies that demonstrate biological effects, it is stated that such effects do not necessarily lead to health effects. Moreover, the course leaders take the health complaints of the electro-sensitives they personally know insufficiently seriously."

During the antenna course where Kivits participated, the comparison with asbestos also came up. "To my remark that the government for decades maintained that asbestos was harmless, I got as answer that that concerned a political choice, but that at the time they were aware of its harmfulness."[41]

Pop Idol, Top Model and Miss Universe NL are sounding the alarm

It is not only scientists, doctors and other experts from the field who are concerned. Singer Adele is on the one hand astonished about the many phones that 'stare' at her during her concerts but on the other hand also warns for years about the danger of wifi.

The world star said in 2016 in an interview on the website of the British entertainment organization Female First: "It's crazy, when I started, I performed for people. No one had a phone. Now I stand on stage opposite 18,000 phones. And mark my words, wifi is going to destroy us from the inside ... it's everywhere. We'll find out about that in twenty-five years."[42]

"Children are exposed a lot and also much longer", warned Pediatric oncologist Stefaan van Gool of University of Leuven in the Zembla documentary *Sick from Your Mobile Phone* from 2012. "The consequences of that we only know in fifty, sixty years. So you can actually say: this is a mega huge experiment."

The tweet "Dear people, please watch this: https://www.bnnvara. nl/zembla/artikelen/ziek-van-je-mobieltje" from 'our own' Doutzen Kroes made this episode in one go the best viewed Zembla episode ever.

"Children have a thinner skull than adults, therefore the radiation from a mobile phone penetrates deeper into their brains. We now try to raise them in the same way as when we ourselves were younger: with books and physical games", the top model let know in 2019 on her Facebook timeline.

In the message, she also drew attention to the more than ten thousand times signed petition *No 5G Network but a Lowered Radiation Norm: Scientists Warn for 5G*. The petition calls to stop 5G and instead get more protection for the radiation that is already there (2G – 4G).[43] For Kroes it is clear: she carries the phone in her bag and not in her pocket, puts her laptop on the table and not on her lap, does not call in enclosed spaces (car, elevator, bus, train or airplane) and turns her mobile off at night.

Former TV presenter Charlotte Labee, who in 2008 was elected Miss Universe Netherlands, is author and head of the Dutch Brain Balance Institute. She sees in particular the frequent and prolonged use of airpods ('wireless earbuds') with sorrow.

"I see so many young people, but also adults, who sometimes sit with those airpods in for hours. They think it is reasonably harmless because everyone walks around with them." Airpods and wireless headphones however have a negative influence on our brain according to Labee.

"The radiation from them is still noticeable ten meters away. So also when you sit next to someone who has them in, that influences your health." She warns among other things for hormone disruption, stress activation, more unrest in the cells, increased inflammatory reactions, worsened hearing and memory and a worse focus.

About the fact that in the user manual of mobile phones it is advised not to hold the device too close to the head, Labee says: "That has a reason. And what do we do? We put those airpods in our ears throughout the day. I am very curious what in thirty years the effect of that will be."[44]





Chapter 7

“Radiation sickness, isn’t that just in the head?”

Tin foil hats and 5G crazies?

On the website of the Electrohypersensitivity Foundation (EHS), an independent center in the field of electro-sensitivity, radiation sensitivity is described as “the phenomenon that people suffer from electromagnetic fields (EMF) whereby they develop specific health problems”.

The most reported complaints are pain in or pressure on the head, fatigue, tinnitus (ear ringing), sleep problems, memory and concentration problems, brain fog and heart rhythm disorders.[1]

The EHS Foundation works with several Dutch doctors on its own EHS diagnosis and treatment protocol. In Austria, something like this has been in use since 2012. At the European level, the EHS guideline appeared in 2016 from the European Academy for Environmental Medicine (EUROPAEM – European Academy for Environmental Medicine) and Canada has had a doctors’ guideline for the diagnosis and treatment since 2020 of EHS.

The starting point of these parties is that an EHS person physically demonstrably reacts differently to EMF than a non-EHS person.[2, 3, 4]

Can radiation really make us sick or is that simply the imagination of people who ‘are afraid of radiation’? If you think that complaints as a result of radiation ‘are just in the head’ then you might just be right. In many scientific studies it has namely been demonstrated that even

at the slightest exposure to radiation the blood-brain barrier starts to leak. The blood-brain barrier is the boundary between the bloodstream and the brain that can be considered as a soldier that selectively lets through the necessary substances and blocks harmful substances. The blood-brain barrier thus protects the brain, among other things, against toxins, infections and microbes.[5]

With an EEG (brain scan) or ECG (heart film) it is clearly visible to show that our brains, our heart and our cells are controlled by tiny natural electromagnetic pulses. It is not difficult to understand that the artificial electromagnetic pulses from radiation influence that. That can result in cells no longer functioning optimally and a wide range of complaints arising.

From live blood analysis studies, it has also been found that radiation causes the Rouleaux effect: adhesion of red blood cells whereby they form a kind of 'coin rolls'. This makes the uptake and transport of oxygen more difficult.[6]

The treacherous thing is that such effects cause a domino reaction in all kinds of biological body processes. Although we do not notice anything or not directly anything from that, our body is day in day out exposed to a disruptive environmental factor. It is therefore quite *tricky* to simply assume that it 'can do no harm because we have no complaints anywhere' and to label people who get sick from it as tin foil hats or 5G crazies. They might well be the proverbial canaries in the coal mine.

The condition EHS affects people from all walks of life. Such as the Norwegian doctor Gro Harlem Brundtland who previously was both prime minister of Norway and Director General of the WHO. She gets headaches from mobile calling.

People in her vicinity must therefore turn off their phone: "It is the electromagnetic radiation that I react to. I think that we must follow the precautionary principle, especially when it comes to our children", Brundtland said in 2002.[7]

Also – or should I say especially – people from the telecom sector fall victim to it sooner or later: in the nineties the Swedish engineer Per Segerbäck who was at the cradle of the smartphone at Ericsson. Segerbäck then led a group of employees of which half were also affected. His career ended because of this and he has since been forced to live in isolation in the woods.[8]

Matti Niemelä, who was once technical director at Nokia, traveled ten years around the world with a Communicator (early smartphone) in hand. In 2007 he could no longer walk where people were mobile calling, because that caused coordination problems. The irony of this is that Niemelä can no longer use any of the devices he has developed.[9] "These things have been kept quiet for too long", he thinks.

Former Silicon Valley engineer Jeromy Johnson was up in 2011. "I worked more than a decade 24/7 with computers, wifi and mobile phones. Without adverse effects. But when I returned in 2011 from summer vacation I got headaches, heart palpitations, tinnitus and insomnia within a few days. I had never experienced this before."[10, 11]

Radiation can cause a large number of different physical and emotional complaints: fatigue, loss of concentration, headache, brainfog (a head full of 'cotton'), insomnia, dizziness, tinnitus (ear ringing), flu feeling, skin problems*, dry mouth and eyes, swollen mucous membranes, increased blood pressure and heart rate, muscle and joint pain, memory problems, difficulty thinking, behavioral change (stress, anxiety, restlessness, irritability, increased aggression).

Long-term exposure can lead to reduced fertility, low resistance, diabetes, depression, intestinal problems, allergies, disrupted hormone production, burn-out, light sensitivity, sensitivity to chemical substances (MCS), fibromyalgia, chronic fatigue, heart rhythm disorder, altered protein synthesis, cancer, neurodegenerative diseases like Alzheimer's and developmental problems like ADHD and autism.

* Because 5G uses higher radiation frequencies, the skin gets 60x heavier to endure. With the advent of 5G, the number of skin problems is therefore expected to increase exponentially.[12]

There are many scientific studies that confirm this. Such as for example the study published in 2022 by the French professor Dominique Belpomme: *Why electrohypersensitivity and related symptoms are caused by non-ionizing man-made electromagnetic fields: an overview and medical assessment,* which clearly demonstrates that there are "objective pathophysiological changes and health effects that are caused by exposure to EMF in EHS patients and especially in healthy subjects".

Belpomme, who as professor of Oncology is affiliated with the Université Paris-Descartes and is chairman of The European Cancer and Environment Research Institute (ECERI), signals "a proven link between electromagnetic radiation, cancer, leukemia and Alzheimer's disease" and also refutes in the same research the hypothesis of a nocebo effect, where negative expectations ('fear of radiation') would lead to negative effects.

In addition, the study contains an overview of sixteen studies published between 1997 and 2014 from nine countries in which estimates of the number of people with radiation complaints are mentioned. The percentages range from 0.7 in Finland (2002) to 13.3% in Taiwan (2007). Two Dutch studies in the overview point to 3.5 (2011) and 7% (2013).[13]

That there is indeed such a thing as intolerance to radiation and that radiation complaints are not feigned or stem from an underlying psychiatric disorder is certain for the French professor. That opinion is based on brain scans and blood tests that he, in collaboration with a scientific team, has performed on over a thousand people who described themselves as "electro-sensitive".

The treatment plan that the experts developed afterwards focuses on closing the blood-brain barrier, restoring the brain cells damaged by electromagnetic radiation and administering antioxidants: substances that can capture free radicals (harmful particles that attack the cells).[14]

The International Commission on the Biological Effects of Electromagnetic Fields (ICBE-EMF – a multidisciplinary international team with expertise in the health effects of EMF) founded in 2021 makes recommendations "based on the best peer reviewed scientific research publications".

The commission aims to see EHS formally recognized worldwide as a "EMF-induced external cause of injury"; research funding; lower exposure limits and full social accessibility for EHS persons. The commission analyzed multiple scientific studies and individual case reports and published based on that in July 2024 the 'position paper' *Electromagnetic hypersensitivity is a humanitarian crisis that requires an urgent response.* The authors conclude that "the widespread disruption of lives is inhumane and very disturbing".[15, 16]

Canaries in the coal mine

The emeritus professor in Cell Biology, Histology and Neurobiology formerly affiliated with the Karolinska Institute in Stockholm dr. Olle Johansson, authority in the field of artificial electromagnetic radiation and the effects on health and biology, has been doing research for many decades on the health effects of EMF.

He states that EHS is not a disease, but a "fully justified avoidance reaction to an inferior environment". The current radiation load is according to the professor "trillion times higher" than the natural background radiation. That is a 1 with eighteen zeros.

In an interview with the German industrial psychologist and health coach Davida van der Walt from December 24, 2024, Johansson highlights the route that possibly leads to electro-sensitivity and explains what happens in the body: "The common denominator for the onset of electro-sensitivity is oxidative stress: the body can no longer remove the many harmful free radicals. Wireless radiation reduces the production of glutathione and melatonin causing the body to no longer detoxify and the sleep to be disturbed. Calcium channels, which

normally only temporarily open to provide muscles and bones with calcium ions, open up." This causes a harmful excess of calcium to end up in muscles and organs. That can cause complaints like muscle weakness, pain and cramps.

"The activation of mast cells causes the histamine production to increase", Johansson continues. "These cells play an important role in the defense against intruders from outside, for example microbes or toxic substances. They produce a large number of substances that activate the surrounding cells causing effects on the nerves and skin to occur. The mast cell is the most important cell and histamine the most important molecule in the onset of allergies, asthma, electro-sensitivity and the like. As a result of all these body reactions, the immune system is initially activated to subsequently decline."[17]

Johansson foresees that everyone at some point might develop EHS or another health problem.

"Since we now live in such a toxic environment, I consider EHS persons as the new normal people. People who experience no complaints are *electrohyposensitive*: they apparently do not react to this toxic environmental factor. We should be grateful to the EHS canaries in the coal mine for what they tell us: this is not good for us. How many studies still need to come before governments and health organizations put on the brakes? When will they wake up?"[18]

Better safe than sorry

"The complaints that radiation-sensitive people have are no unique complaints. On the contrary, they are broader and increasingly common complaints, such as (unexplained) feelings of stress, depression, insomnia, fatigue and the like. Could these complaints be radiation-related in a much larger group of people, without us knowing that?" This question was posed by former D66 state secretary of Culture Medy van der Laan during a lecture at the symposium *Digitalization and Energy Transition* that the Knowledge Platform Electromagnetic Fields organized on November 29, 2023. In her presentation *Signals of*

electro-sensitivity: Starting point for further knowledge development, the former politician called on policymakers to take the harmful consequences of radiation seriously and to choose for a policy based on *better safe than sorry*.

For example, by doing more intensive research into the connection between health complaints and radiation, actively informing society and especially doctors and urging manufacturers to provide their wireless devices with a practical 'on/off button'. How much the subject touched the passionate speaker's heart became clear when she revealed her own radiation experiences.

Van der Laan, who considers herself a canary in the coal mine, discovered in 2017 that her physical and mental complaints were caused by electromagnetic fields. Smartphones and the many wireless microphones that surrounded her during meetings caused her severe headaches and led to depressive feelings.

What was noticeable was that without radiation she had no complaints and that they, when the radiation source was removed, disappeared almost immediately. The latter proved easier said than done: "Buying a new television seems easy, but even sellers and manufacturers do not know how to turn off bluetooth and wifi. Why must a refrigerator and heater have wifi? Why must everything be wireless and why is there no choice?"[19]

Electro-sensitivity finally recognized?

That the GGD has been aware of this growing problem for years was evident when spokesperson Fred Woudenberg in 2018 in a broadcast of EenVandaag advocated for "a good treatment center for electro-sensitive people" and for "a place in the Netherlands where electro-sensitive people can come to rest".[20]

Meanwhile, the sensitivity to radiation is by the government and the advisory bodies connected to it, most physicians and the telecom sector completely ignored and systematically denied. Letters from an increasing number of concerned or radiation-sensitive people to

the Ministry of Health, Welfare and Sport (VWS) are tellingly enough consistently forwarded to the Ministry of Economic Affairs (EZ).

It has taken unbelievably long and caused a lot of suffering for those affected, but in 2025 a glimmer of hope is dawning on the horizon. This has partly come about thanks to a series of conversations that the EHS Foundation (ElectroHyperSensitivity – an officially recognized patient association for radiation-sensitive people) has conducted with the disability organization Ieder(in), the College for Human Rights (CVRM) and various policy officers of the Ministry of VWS.

From the CVRM it was then decided that radiation-sensitive people also fall under the UN Convention on Disability. Shortly thereafter, the Ministry of VWS reported: "We agree with the findings that everyone, including people with EHS, has the right to accessibility and inclusion."

Note: EHS as a specific disease is still **not** recognized. In the Netherlands, the UN Convention on Disability is translated into the Equal Treatment Act on the grounds of disability or chronic illness (Wgbh/cz).

"This law determines that people with a disability or chronic illness must be able to participate in society just like everyone else. Schools, workplaces, shops and companies must ensure that everyone can use them. There is a prohibition on discrimination and an obligation to make an adjustment", states the website of the EHS Foundation. However, before actual inclusion for radiation-sensitive people is actually a fact, a lot of work will still need to be done: "With the UN Convention on Disability we have new and important tools in hand, but an improvement of our situation still needs to be built from the ground up", relativizes the foundation.[21]



Image by Paul Hanaoka



Chapter 8

Question marks about 5G

5G, a good idea?

Despite the many years of warnings and alarm signals, since 2018/2019 the advent of the 5G network (the 5th generation wireless networks) has been presented cheeringly by media and politics: “5G is even faster and can transmit much more data. Moreover, with 5G complicated processes can be automated and controlled remotely.”

And what about self-driving cars and remote operations? Who wouldn’t want that!? However, the disadvantages of 5G are usually kept out of sight: more antennas in our living environment (every 10 to 250 meters), more and stronger radiation, a higher exposure limit, 150 to 170% more power consumption, hundreds of thousands of satellites in space ...

5G, what does that entail?

Unlike the name suggests, 5G is not just the successor to the already existing wireless networks (2G to 4G). 5G introduces a completely new technology whose basis consists of **millimeter waves, small cells, massive MIMO, beamforming** and **full duplex.**

Millimeter waves are ‘highways’ of 30 to 300 billion waves per second (30-300 GHz). These short waves are obstructed by buildings and other obstacles and are absorbed by plants and rain. To remedy

that, a dense network of many tens of thousands of '**small cells**' is being installed. These are transmitters, comparable to wifi routers, that in public spaces, at ten to hundred meters distance from each other, are placed. These transmitters ensure a better connection and faster internet, also in crowded places. How many **small cells** are placed remains unclear.

Massive MIMO (Multiple Input, Multiple Output) is a technology whereby a set of multiple, interconnected antennas work together as one single antenna. This allows 5G antennas to make a very targeted connection with a group of phones or devices.

This uses **beamforming**: directing the data in a direct beam at a specific user. A worrying development that is given no further publicity is that the exposure limit for **beamforming** in 2020 has been quadrupled from 10 to 40 W/m2.

Full Duplex antennas are equipped with two 'tracks' allowing them to transmit and receive simultaneously instead of or/or, as was still the case with 4G. Because of all this, 5G can process a thousand times more and ten times faster data than 4G. This brings virtual reality, self-driving cars, the Internet-of-Things (IoT) and all kinds of other applications, that we cannot even imagine now, within reach. In short, 5G offers us possibilities that make the functionality of the previous networks pale in comparison.

5G, how far are we with it?

The first phase of the rollout of 5G in the Netherlands was completed in 2020. In the summer of that year, the government made three frequencies available for 5G via an auction: 700, 1400 and 2100 MegaHertz (MHz). The revenue for the treasury amounted to 1.23 billion euros.

The 5G antennas on these three frequencies have a range of several kilometers and have been added to existing transmission masts and on existing antenna locations. It is estimated that several hundred thousand of these 5G antennas have been placed. However, the

Antenna Bureau gives no clarity about the exact number. In fact: in February 2020 (half a year before the rollout of the first phase of 5G) it was decided to only count the antenna locations and no longer the number of antennas present at that particular location (not infrequently more than ten).

Anyone who wants to know where the antennas (2G to 5G) are located, how many there are and which provider placed them when, can go to https://antennekaart.nl/kaart/4g.

In phase 1 of 5G, it was more or less built on the existing technologies and there was little new under the sun. It is mainly the following phases of 5G that will shape the announced digital revolution. Phase 2 of the rollout of 5G started in the summer of 2024 with the auction and the subsequent rollout of 5G via the 3.5 gigahertz frequency (GHz).

Since then, small cells are being hung in more and more places around us: in lampposts, on bus shelters, advertising columns, park benches and garbage cans, under manhole covers and you name it.

To what extent the radiation load in our living environment since the advent of 5G on 3.5 GHz has increased, can be seen at https://emfkaart.nl/analyse/

Another essential part of phase 2 is the Internet of Things (IoT) network. The IoT network consists of all 'smart' (household) devices that are in contact with other devices or systems via the internet and exchange data with them.

The (already existing) IoT network has been significantly expanded since the start of phase 2, because more and more 'smart' applications, equipped with sensors, cameras and/or microphones are being created. To what extent the data that this IoT network stores are sold on to unknown third parties is not traceable.

The 26 GHz will also be used in phase 2 for 5G. It involves a large (but unknown) number of antennas with a range of a few meters, in indoor and outdoor spaces. The Health96 Council has advised "not to put the 26 GHz frequency band into use for 5G as long as possible health risks have not been investigated". However, the government has announced to disregard this advice.

What will happen after phase 2 is still unknown, but that the digital revolution continues at a flying pace is certain. The preparations for 6G are in full swing in 2025 ...

5G, what's wrong with it?

That scientific and medical experts absolutely do not want to wait for yet another new generation of wireless technology is loud and clear from the *5G Appeal* that 260 international scientists and doctors offered to the European Union in 2017. In it, they call for the rollout of 5G to be stopped "until possible dangers for human health and the environment have been fully investigated by scientists who are independent of the industry. 5G will increase exposure on top of 2G, 3G, 4G and wifi significantly. Electromagnetic fields have been proven harmful to humans and the environment."[1]

One of the signatories, the American emeritus professor of biochemistry and medical sciences at Washington State University Martin Pall, sent an alarming message into the world a year later: "Placing millions of 5G antennas without a single biological safety test must be the stupidest idea that anyone has ever had."[2]

Researcher dr. ir. Inge-Willem Noordergraaf, Senior Research Scientist at the University of Groningen, is also worried. In the Telegraaf article Do not roll out *5G before the health risks are clear* from December 6, 2019, he warns: "We must immediately stop the development of a 5G network. Contrary to what is claimed by governments and telecom companies, there are many indications of serious health risks."

Noordergraaf foresees, among other things, possible serious neurological problems and a possible increase in the number of cases of melanomas (skin cancer). "In addition, the eyes and the testicles are directly in the danger zone", says the scientist.[3]

"To my knowledge, the telecom sector has not conducted or financed any 5G studies. We rely on what science tells us and are always open to more research."

That answer was given to American senator Richard Blumenthal during a hearing in February 2019 when he asked the telecom sector representatives present there: "How much money has the telecom sector invested in additional independent research into the biological effects of 5G?" and "Is there independent research ongoing or already completed and if so, where can it be found?"

Blumenthal reacted visibly stunned: "So we are kind of flying blind here with 5G, as far as health and safety are concerned."

A year earlier, the senator had knocked on the door of the Federal Communications Commission (FCC), the American organization that has the task to regulate the wireless industry. His request whether the FCC could provide information showing the safety of 5G, what research had been done and where that was published, however, yielded nothing.[4]

"Scrap the rollout of 5G. This technology is unprofitable and harms the environment." You wouldn't expect it right away, but this is what a thousand employees of France's largest telecom company Orange wrote in 2020 in – leaked – internal memos to the management. They were not listened to.[5]

From the Dutch government, however, the reassurance has been sounding for years that 5G is safe. That would among other things appear from the in 2020, at the request of the government, published advisory report *5G and Health* by the Health Council in which it is concluded that no evidence has been found of health risks.[6] There would therefore be no reason to stop the 5G rollout.

In reality, the Health Council says that they 'just don't know'. It is "not known at what level of exposure effects can occur and also not how high the exposure of people will be after commissioning of the 5G systems". In a news message on the website, the Health Council translates that to: "No evidence that 5G can harm health". In other words, when in doubt, just cross. In fact, this makes us guinea pigs.

Anyone who takes the trouble to read the summary of the 5G advisory report will certainly not be reassured. In it, the Health Council not only acknowledges that it is unknown whether 5G poses health

risks, it also states that no internationally recognized measurement method is available for the 5G technology and that no research has been done on 5G at 26 GHz.

Moreover, the report states, health damage below the exposure limit "cannot be excluded". It concerns inducing or promoting tumors, neurodegeneration of brain tissue (ALS, Alzheimer's), reduced male fertility, worse pregnancy outcomes and birth defects. Changes in the signal transmission of the brain are categorized as 'probable'.

This report has been on the agenda three times in the House of Representatives at the end of 2020/beginning of 2021, but the discussion of it has been postponed each time. Since then, no politician has returned to it. In fact: the government does not follow the 5G advice of the Health Council at all:

Monitoring before, during and after rollout:
Is not done.

More research into the relationship between 5G and cancer, reduced fertility and other health damage:
Is not done. The government follows ongoing international research projects.

Not putting the 26 GHz frequency into use for 5G:
Is done anyway.

Applying precaution and keeping exposure as low as reasonably possible because it cannot be excluded that also exposure below the ICNIRP norm has the potential to harm health:
Is not done: the government still uses the highest limit in the world.

"5G advisory report fraudulent and on multiple fronts not right"

During her working life, the now retired social psychologist drs. Vera Verhagen has fully occupied herself with analyzing scientific research, where she was affiliated for several years as a scientific social-psychological researcher with the University of Amsterdam.

After going through the 5G advisory report of the Health Council, it was clear to her: the conclusion is "one-sided and unfounded" and moreover, there is scientific fraud. "The Health Council did this research to advise whether it would be safe enough to roll out 5G.

The summary of the analysis is very clear on multiple fronts: the influence of 5G frequencies on health is partly not yet investigated; the actual health risks are not known; and it cannot be excluded that the occurrence of cancer, reduced male fertility, worse pregnancy outcomes and birth defects are related to exposure to radiofrequency electromagnetic fields."

Although this in itself gives sufficient reason for concern, Verhagen calls this summarizing conclusion "one-sided and unfounded". She decided to study the 5G report thoroughly in terms of content for the benefit of the lawsuit that Stop5GNL filed against the state in 2020. However, the judge disregarded her findings because only in a substantive procedure can content issues be addressed.

"The document of the Health Council is not right on multiple fronts, but scientific fraud is apparently no reason to revise the national telecom policy. Anyone who reads the report will namely discover that based on the sub-conclusions the warning in the summary should be much stronger: there is probably health damage.

Moreover, the conclusions of the experimental studies are incorrectly represented. In none of the thirty-seven experimental studies would any effect have been found, while in eighteen of the original publications harmful biological effects are displayed. That is almost half! It then concerns effects on the electrical activity of the brain, cognition, cerebral blood flow and heart rate. Nevertheless, the Health Council

writes in the 5G advisory report that no harmful effects would have been found in any of these studies.

But there is more: in the summaries that the Health Council has made of all the studies, connections are regularly not mentioned that are indeed reported in the studies and many sub-conclusions are weakened from 'probably harmful' to 'possibly harmful'. That is simply an incorrect representation of what is reported in those studies. Call it lying on paper.

There has been downplaying on all fronts, because the Health Council has also left a large number of peer reviewed studies with the conclusion that health damage is probable, out of consideration on the basis of possible preconceived notions. That is ridiculous, especially when you consider that the Health Council's own research is never subjected to a peer review. In short, the advisory report on which the rollout of 5G in the Netherlands is based is downright fraudulent. I analyzed that completely at the time and I made a report of it so I can show that research by research."

(What else Verhagen found out you can read in *Comments on the Background document advice 5G and health of the Health Council*[7].)

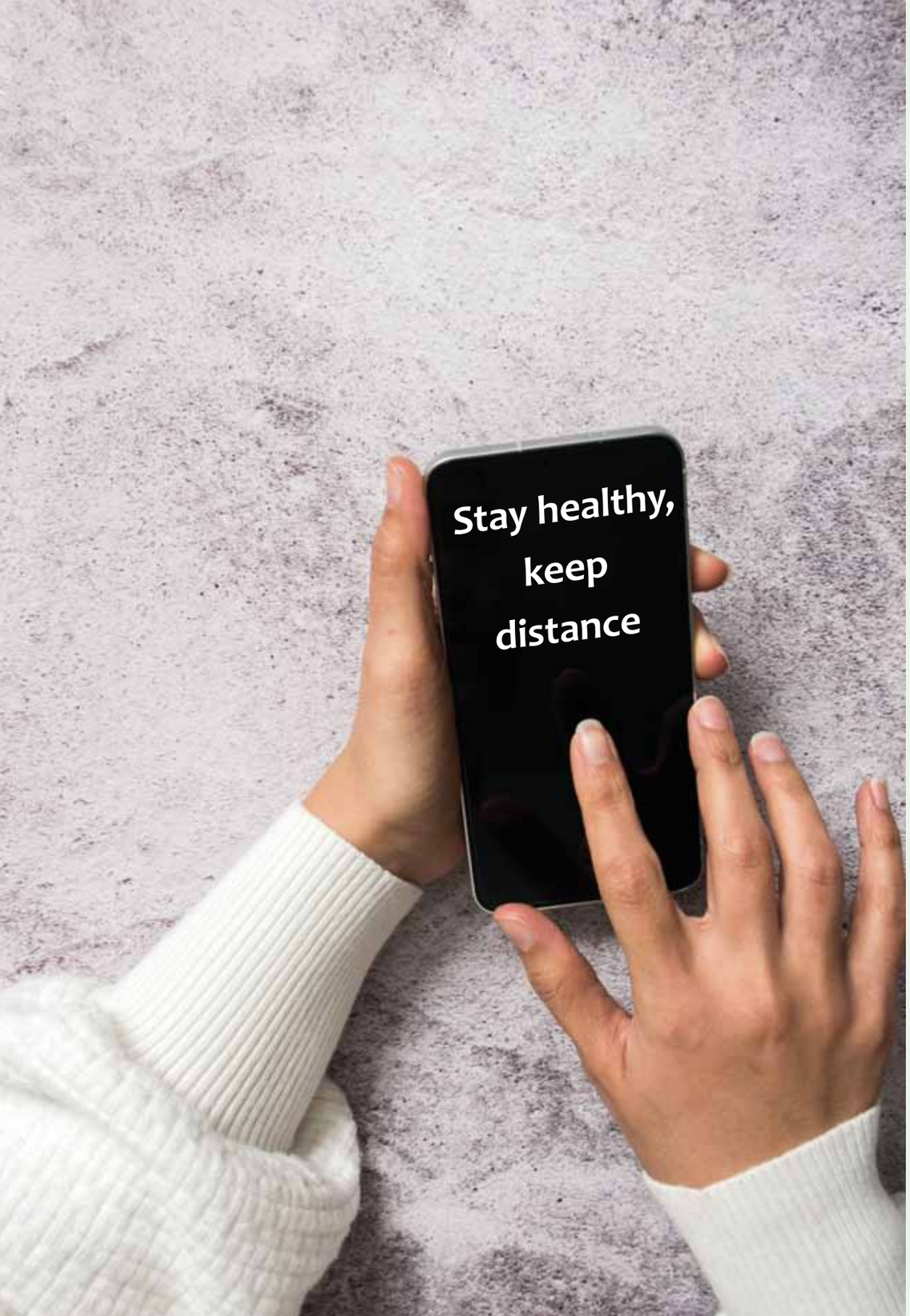
"It is quite strange that we are going to expose a whole population, driven by technology, to something of which we are not sure whether it can do harm or not", warned professor Hans Kromhout in 2020 in the video *Is 5G harmful?* from University of the Netherlands.[8]

In another media message, the professor says he is surprised about the speed with which the 5G network is being rolled out and repeats his concerns: "No new pesticides come on the market without them being extensively investigated. With 5G that happens too little, so we don't know if it is harmful or not."

Kromhout does not hide that it is a thorn in his side that only technical measurements are carried out near 5G antennas, that no exposure of individuals is measured, no future scenarios are calculated and no health risks are estimated. "That must change", he thinks. "You must not just let the industry have its way."[9]

Would the telecom sector get so much leeway, because the sale of the frequencies over which providers can roll out their wireless networks has so far yielded the treasury some twelve billion euros? In other words, does the government consider money more important than health?

(See also Appendix 4: *Contribution for ongoing research into healthy living environment – General Court of Audit.*)



Chapter 9

Responsible Phone Use and Safe Technology

Ten tips: be wise with phones, tablets and wifi. There are some simple ways to reduce exposure to radiation.

1. Use an internet connection via a network cable as much as possible. That is completely radiation-free. With a USB-C ethernet adapter, you can even wire your mobile phone.
2. Do not place the phone on your nightstand or under your pillow, do not carry the device on your body, in your breast or pants pocket or bra. Place the tablet on the table instead of on your lap. Keep the mobile phone at least 2.5 cm away from the ear during calls. (This warning is hard to find in the phone and was also in the fine print of the user manual until 2024, but was then removed![1])
3. If possible, put the phone on airplane mode and put the device in an anti-radiation case (findable via search engines). If that's not possible because you want to remain reachable, at least turn off wifi, bluetooth, mobile data, GPS and NFC (Near Field Communication – similar to bluetooth, but with a smaller range).
4. Make calls as much as possible via the speaker or choose airtubes (radiation-free airpods). Do NOT use airpods: the wireless signal from them goes straight through the brains. Those who still have a landline phone can forward incoming mobile calls to the landline as much as possible.

5. Turn off wifi and wifi boosters when they are not in use (for example at night), set the transmission power lower or use an eco-wifi router, which emits less radiation and automatically turns off when you are not using wifi. Turn off bluetooth on phone and other devices when you are not using them.
6. Do not use a DECT phone (cordless home phone) or cordless baby monitor. Instead, choose wired or the 'eco-mode plus versions'. These emit much less radiation.
7. Keep smart toys out of the house and let children use the phone or tablet as little as possible.
8. Avoid using the mobile phone in the car, bus, tram, train or elevator. The metal environment reflects the radiation back, resulting in higher exposure.
9. Avoid screen use just before sleeping. The blue light from screens disrupts sleep because it reduces melatonin production.
10. Measuring is knowing. Want to know about the radiation exposure in your home? Rent or buy a radiation meter via stralingsmeterhuren.nl or hire a certified measurement specialist via the Association Electromagnetic Radiation (VEMES - vemes.nl).

The power of the consumer

Dealing wisely with substances and products that may have harmful effects on our health is obviously important. Wireless technologies are no exception. At the same time, we as consumers can exert our influence on what appears on the market.

Suppose that from now on, everyone inquires at the purchase of a 'smart' device (doesn't matter what it is: a washing machine, a printer, a toothbrush, a hearing aid, a refrigerator, an electric piano, you name it ...) in the store whether the item contains an on/off button for the wireless signal (wifi, bluetooth) so that the consumer has a choice?

Now that is not the case and more and more devices are 'smart'. Those who do not want that, because of the radiation exposure or perhaps from a privacy aspect (not only smartphones, but also all smart household appliances have an impact on our privacy), usually search high and low for a 'dumb' variant. An on/off button could remedy this.

In addition, mobile phones could simply be designed in such a way that they emit less radiation. For example, through a built-in function that ensures that the device, when not in use, automatically switches to airplane mode, turns off wifi and seeks contact with a base station less frequently to determine the location; an infrared sensor that ensures that a phone close to the body does not radiate; or an application that tracks how long we call and warns us when we have reached our 'exposure budget'.[2]

If retailers and producers notice that consumers want these kinds of adjustments, they will certainly be sensitive to them.

More data with less radiation – how can the government make our mobile communication healthier?

The German environmental and consumer protection organization diagnose:funk, with the mission "to promote solutions for environmentally friendly and future-proof technologies", publishes the informative brochure *Kompakt* four times a year.

The article *Transmitter radiation and desired policy – how can the government make our mobile communication healthier?* (fully reproduced in Appendix 3), describes advanced techniques and methods by which care can be applied in seven different policy areas. The article is based, among other things, on the *Technology Advice* issued by the German government in 2023, which describes risks of and alternatives to wireless radiation.

To improve public health, for example, it is advised to draw up a new exposure guideline that takes equal account of both heating and biological effects. In addition, the article describes eight technical and eight general, societal measures to improve accessibility and protection of people and flora and fauna and to reduce energy consumption and radiation exposure.

Examples:

1. Setting up one central national mobile network for everyone, instead of multiple separate networks per provider that only their own subscribers can use.
2. Wired alternatives for communication equipment, instead of exclusively wireless variants;
3. Eco-models of wireless devices, where users can regulate (reduce or completely disable) the transmission power;
4. Targeted public information campaigns about the potential risk of cancer, fertility problems and the like;
5. Age restriction for children;
6. Medical care for and protection of electrosensitives;
7. Residential and natural areas where the use of mobile phones and/or the placement of antennas is prohibited or severely restricted;
8. A digital **opt out:** the right to an analog life.

It is possible!

The big question is: industry, providers and governments, what are you waiting for?

PART III

Concerned about bees, trees and biodiversity?



INTRODUCTION PART III

It is no secret to anyone that there are far fewer bees and insects nowadays, that trees are not doing well and biodiversity is declining rapidly. The general explanation is that bees are suffering from agricultural poisons, trees from diseases originating from imported trees or things like drought, unsustainable logging and urban development and that biodiversity is suffering from, among other things, drought, nitrogen and climate change.

Yet scientists indicate that they are still partly in the dark. Is there possibly another cause that we have overlooked so far?

Could the ever-increasing artificial electromagnetic fields from our mobile telecommunication equipment also play a role? Since we have been communicating massively on mobile, the artificial radiation in our living environment is namely a 1 with no less than eighteen zeros higher than the natural background radiation of the earth and the sun. What do scientists and other experts say about the risks of this new environmental factor for animals and plants?



Chapter 10

Does radiation make life sour for nature?

Insects, who still sees them flying?

Scientists from Radboud University and the EIS Knowledge Center Insects reported in 2018 that two thirds of the Dutch insect population has disappeared. Plants that depend on insects for pollination are also on their way out.[1] From German research published in 2017, it appeared that since 1990 seventy-six percent of insects have disappeared.

Insects play the leading role in the ecosystem: they process organic material, ensuring a healthy soil and they are indispensable as food for countless animal species including birds. Unfortunately, those also turn out to be fewer and fewer. In France, for example. There the bird population has decreased by 33% since 2000.

Many people would rather lose insects than have them, but bees, butterflies, flies and hoverflies are also literally vital to us. They pollinate flowers and thus play a crucial role in our food security. They simply cannot be missed ...[2]

Just agricultural poison?

That pesticides have a very harmful effect has been known for a very long time. Marine biologist Rachel Carson wrote the bestseller *Silent Spring* about it in 1962. And although legislation has been tightened since then, agricultural poison remains a major source of concern. Carson's book inspired American physician Cindy Russell of Physicians for Safe Technology in California to write *Wireless Silent Spring*.[3]

In that document published in 2018, Russell describes nine similarities between pesticides and electromagnetic fields:

1. Both are invisible.
2. Both are present everywhere in our living environment.
3. Both are around us our whole life.
4. Everything and everyone is exposed to them.
5. Both were initially developed for military purposes (pesticides as chemical warfare and radiation as communication/location/eavesdropping equipment).
6. Both cause oxidative stress.
   That means that an excessive amount of free radicals is present in our body. Free radicals are harmful substances that are released during metabolic processes or due to unhealthy environmental factors. They attack healthy body cells and can damage our genes.
7. In both cases, there is a cocktail of exposure (2G through 5G).
8. Both lead to health complaints.
9. In both cases, there is deception from the industry.

Scientific studies show that there is good reason for concern. Such as the Belgian literature review *Exposure of Insects to Radio-Frequency Electromagnetic Fields from 2 to 120 GHz* from 2018. It shows that the frequency spectrum from 2 to 120 GHz (used for 5G and wifi) can cause both an increase in body temperature and a change in behavior and physiology in insects.[4]

Or the scientific study overview that various German environmental and consumer organizations published in 2020. This research was led by biologist and environmental scientist Alain Thill. The conclusion was that, in addition to pesticides and the loss of habitats, radiation from mobile phones also has negative effects on the orientation, reproduction and foraging of insects.[5]

Where are we without the bee?

"I have never had so much mortality in the past ten years," says Dutch Sonne Copijn, who has been a beekeeper since 2009 and founder of The Bee Foundation, in a video message from May 2025.[6] In response to this experience, Copijn conducted research in March 2025, for the third year in a row, into bee mortality in the winter of 2024-2025.

Through a survey among nearly two hundred beekeepers, she found that on average 21% of honeybee colonies did not survive the winter of 2024-2025. In Utrecht, that percentage was 40%. Mortality among honeybee colonies has been extremely high since 2020. What is striking is that half of the beekeepers are dealing with extremely high mortality and the other half has no mortality at all. The majority of beekeepers who were previously confronted with bee mortality also had dead colonies in the winter of 2024-2025.

The phenomenon therefore seems to be location-bound. Copijn's research found 64 different pesticides, of which 21 have never been approved or are outright banned in the Netherlands. On average, 12.5 agents were found per sample. "The environment is so toxic to bees that they die from their own honey," says Copijn in the press release *Bee mortality 2025 – a toxic cocktail* on the Bee Foundation website.[7]

"In 2021 and 2022 it was reported that more than ninety percent of bumblebees in the United States have disappeared and that more than ninety percent of Canadian honeybees are extinct," Swedish emeritus professor and radiation expert Olle Johansson from the Karolinska Institute told in March 2023 in an online interview with health scientist

Dr. Tess Lawrie of the World Council for Health. “And if you look at the rest of the world, you see the same pattern.” As the cause of this global disaster, Johansson sees a different reason than the pesticides mentioned by beekeeper Copijn: “Scientists have exposed insects to radiation from wireless equipment and found: they don’t like it. I try to draw attention to this and I do my very best to interest people in this topic, but there are few people who want to listen. It is a tough battle.”[8]

There could of course also be other possible causes, such as air pollution, wind turbines, the Varroa mite or a combination of all this. Bee mortality as a result of communication equipment, as Johansson indicates, is however not a new phenomenon.

In the book *The Invisible Rainbow* the late Arthur Firstenberg describes what happened on the British Channel Island of Wight after the Italian Guglielmo Marconi built four radio stations there in the period 1901 and 1904. This made the island at that time the place with the most radio waves in the world. Although no pesticides were used on the island, ninety percent of the bee population on the island turned out to have disappeared two years after the construction of the radio stations. New bee colonies were imported, but they also died within a week.[9] Over the past decades, many studies have appeared that unfortunately all led to the same conclusion.[10]

The 2008 report *Birds, Bees and Mankind: destroying nature by electrosmog* by German biologist Ulrich Warnke, among other things, establishes that bees exposed to artificial EMFs are more inclined to attack their conspecifics and offspring. The research also concludes that exposed bees can no longer find their way back to the hive.

Migratory birds and marine mammals also appear to have navigation problems as a result of wireless radiation.[11]

Swiss biologist Daniel Favre, advisor for beekeeping and former scientific employee at the Swiss National Laboratory for Biotechnology, researched in 2009 the behavior of bees in relation to radiation from mobile phones. To this end, he placed two mobile phones above a beehive. The result was that after 25 to 40 minutes, the bees emitted

alarm signals (high beeps) to indicate that danger was imminent. The repetition of this research, in 2012, yielded Favre the same result.[12]

Indian environmental expert Sainudeen Pattazhy also found in 2009 that electromagnetic waves disrupt the navigation of worker bees. Pattazhy found that worker bees, as a result of a nearby transmission mast, were unable to return to the hive, causing the colony to collapse within ten days.[13]

The Dutch bee organization BeeLife has as its mission to do everything to get the bee back into our environment. “We are committed to making the life of our bees as pleasant as possible and we protect their natural area. In everything we do, we take into account the impact on animal, environment and human.”

BeeLife considers wireless radiation as one of the causes that things are going badly for the bee. “Bees are known to be extremely sensitive to electromagnetic radiation. They use the earth’s magnetic field to navigate. Since 2000, entire bee colonies sometimes disappear spontaneously. Especially in Europe, Australia and America, the continents where many phones have been used for 20 years,” reports the blog *Why things are going badly for the bee* on the BeeLife website.

“There have now been several studies on bee mortality and electromagnetic radiation. One of them took place at the University of Landau in Germany. Eight bee colonies were taken, four of which were provided with a DECT station. The remaining four served as a control group. At the entrance of each beehive, a transparent tube was placed through which the researchers could count the incoming and outgoing bees. Three of the four colonies exposed to radiation died. No bees returned to two hives and only six to the remaining hive. To the control groups, no less than sixteen of the twenty-five bees returned in 45 minutes. In addition to the number of returning bees, the scientists also investigated the weight in honeycomb. The weight of the control group was 21% heavier. Other studies show approximately the same results, showing that radiation really has its consequences on bees.”[14]

Inquiries with the various other nature organizations that our country has whether they are engaged in research into a possible link between radiation and bee mortality yielded the following responses:

Jaap Molenaar, director Bee Foundation on the increased mortality of honeybees: “These are really shocking figures. It is really much higher than average. The honeybees did not survive the winter ... But to say what the big culprit is, is difficult. You need a lot of data to really analyze this properly.”

Naturalis Biodiversity Center (national research institute in the field of biodiversity): “Our bee experts are not involved in that.”

The Dutch Beekeepers Association: “Our knowledge and skills are unfortunately not sufficient to form a judgment and/or position on that.”

The EIS Knowledge Center Insects: “We have no one with knowledge of this matter.”

Bees@Wur conducted a bee study in 2013 with the final advice to do further research. However, this did not happen. In 2023, the organization reported: “For the time being, there seem to be no indications of damage to honeybees.”

Tree damage causes concern

Trees are not only getting sick more often, they are also dying more often. From a report published in 2019 by the International Union for Conservation of Nature and Natural Resources (IUCN) it appears that 42% of the 454 tree species studied on European soil are threatened with extinction. Of the 258 endemic species studied (which occur only in one specific area), it turns out to be 58%.[15]

Scientific research by the Plant Cell Biology department of Wageningen University and the municipality of Alphen aan den Rijn showed in 2010 that wifi and mobile telephony make trees sick.[16] The reason for the research was that municipal officials in Alphen aan den Rijn observed inexplicable abnormalities on the bark in one in ten trees of all tree species. The percentage of sick trees had even risen from 10%

to 70% in 2015. In that same period, the largest increase in the use of mobile telephony and wireless internet also took place.

In the research, among other things, ash trees were exposed for three months to six *wifi access points* at fifty centimeters to three meters distance. The leaves turned out to get a lead-shiny color, which indicates the dying off of the upper and lower epidermis (outer layers on top and bottom) of the leaves. Drying out, stunted growth and leaf death were also observed. The latter especially in the trees that were closest to the radiation sources.

TNO, which was said to have been involved in the research, distanced itself from the conclusions a day after publication of the research results. Wageningen University advocated a more extensive follow-up study with a longer exposure duration. Because no financial resources were available for this, the symposium *Trees and the effect of electromagnetic radiation* was held on February 18, 2011 in Baarn with great interest.[17]

The income and donations of six thousand euros were reserved for the follow-up research with which Wageningen University started in the summer of 2011. The conclusion that followed in 2013 was that there are no indications that wifi is harmful to trees.

Also Ronald van der Graaf, biologist and former general secretary of the Knowledge Platform Electromagnetic Fields (government organization for people with questions and concerns about radiation), stated in 2011: “If you take together the conducted research in this area, there is no indication that electromagnetic fields (EMF) have harmful effects on plants and trees.”[18]

For councilor and former research and development employee at Akzo-Nobel Resins, Louis van der Kallen from Bergen op Zoom, it is certain that the cause of the tree diseases must also be sought in radiation from EMF: “As a technical physicist, I attach importance to hard measurements.”

He refers to a research report from Wageningen University from 2013.[19] “This describes the bio-potential measurements (in which the difference in voltage in a cell membrane – a thin membrane between

the outside and inside of a cell – is measured) on tree cells in a Faraday cage (a cage-like construction of electrically conductive material that ensures that static electric fields cannot penetrate into the cage). It was possible to determine to the minute when a wifi router was turned on or off. There was a visible effect on the value and nature of the measurable bio-potential." (This is the electrical voltage across the cell membrane.)

Van der Kallen's suspicion is supported in a literature study financed by the RIVM from 2013. It concludes that 75% of the 113 analyzed studies show significant negative effects at very low radiation levels in trees and plants.[20]

(A more detailed description of this RIVM study can be found further on at *The whole nature is the victim!*)

The book *Electric Ecosystem* by Sander Funneman gives a similar picture: "In a Latvian study from 1999, pine needles and cones were collected from the tops of old pine trees at four locations near the transmission mast. The stress level in the trees was also measured. The research conclusion was: the radiation leads to accelerated resin production, genetic abnormalities and accelerated aging of pine trees."[21] Elsewhere in the book, Funneman writes: "In North America, countless cases of aspen decline have been recorded in the past half century and since 2004, enormous mortality of young trees has been observed in Colorado. Research into this suggests that the high-frequency radiation from transmission masts has a strong adverse effect on the growth rate and mortality of the trembling aspen."[22]

According to Funneman, a detailed long-term field monitoring was carried out from 2006 to 2015: "Observations and photographic recordings of unusual or inexplicable damage to the trees were made, in addition to measurements of electromagnetic radiation. The measurements of the trees revealed significant differences between the damaged side of the tree that was facing a transmission mast and the other side of the tree that was not facing the mast. The control group trees in low-radiation areas that had no visual contact with a transmission mast at all showed no damage."

Biologist Saskia Bosman shares this view. In her book *Radiation Under Supervision – pilot project Baseline Measurement Veluwe* she describes, among other things, a study from 1996 in which it is observed that "microwaves cause a long-term downward trend in the amounts of calcium and sulfur in the leaves of the beech, with trends that were proportional to the power of the radio transmission station".[23, 24]

The German scientist Helmut Breunig published an extensive observation guide on this subject in 2017 entitled *Tree damage caused by mobile phone base stations.*

Breunig concludes therein: "The assumption that the type of crown damage described in this manual is caused by exposure to radiofrequency (RF) radiation appears justified, because this specific crown damage occurs at exposed locations in the line of sight of base stations for mobile phones (...) at locations outside the lines of sight of RF transmitters, however, this crown damage does not occur."[25]

The German physician and former councilor Dr. Cornelia Waldmann-Selsam has since 2005 performed and documented tree observations at over 1500 antenna installations and in addition analyzed aerial photos. Her study *Radiofrequency radiation harms trees near transmission installations* from 2016 shows a correlation between one-sided damage to trees and exposure to artificial electromagnetic radiation. Further research and a reassessment of the current limits for electromagnetic radiation proved necessary.

With the aim of presenting her findings that trees suffer from electromagnetic radiation to forest scientists, Waldmann-Selsam participated in May 2023 in the scientific symposium *The future of the beech under climate change* in the German city of Würzburg. "Some interlocutors were shocked by what they heard and definitely saw the need for scientific research in order to verify the suspicions."[26]

Biodiversity: biologists sound the alarm

"When thinking of endangered animals or plants, we quickly think of the panda or the elephant. Or the tropical rainforest." That was discussed at the end of 2024 at an international summit on biodiversity in Colombia. It was not only about nature far away, but also about us, in the Netherlands. About the beech, for example.

How it is with that, you can see in the short video *All kinds of plants and animals disappear: We really have no idea* that has been on NOS.nl since October 21, 2024. "We just don't realize what has actually disappeared in nature around us in thirty years. We stand by, we look at it, but we really have no idea," says biologist Dr. Ir. Arnold van Vliet of Wageningen University.[27]

Everything in nature works on the basis of electricity and magnetism. Flora and fauna depend for critical life-supporting information on the natural electromagnetic fields (EMF) of the earth. It is therefore not strange to assume that the artificial electromagnetic fields created by humans have an influence on that. Moreover: the risks of artificial, high-frequency EMFs from wireless technologies (transmission masts, mobiles, wifi etc.) for flora and fauna have now been amply scientifically demonstrated.

The overall conclusion of biologists worldwide is clear: "Wireless electromagnetic radiation disrupts navigation and other complex cellular and biological processes in mammals, birds, fish, insects, trees, plants, seeds, bacteria and fungi."

However, this knowledge is not yet involved in government policy, the exposure limit, public health, the safety of humans and the environment and the provision of information to citizens. Also people and organizations with a heart for animals and nature are often not, or not sufficiently, aware of the existence of these risks.

The whole nature is the victim!

Abnormal behavior in cows; deformed calves, pups and kittens; DNA damage, eye inflammation/lens damage in rabbits; rats with brain and heart tumors, a reduced melatonin level or reduced thyroid hormone; disturbed echolocation and orientation in bats; navigation problems in various fish species; reduced crop yield and slow germination in plants; trees with damaged and dying branches and leaves.

This is a small but highly disturbing selection from the many research conclusions of biologists around the world.[28]

In addition, the Swiss Dr. Dietrich Klinghardt discovered that radiation causes an explosive multiplication of fungi, bacteria and other harmful microorganisms, also in our body ...[29]

Professor Olle Johansson, worldwide leading authority in the field of artificial electromagnetic radiation and the effects on health and biology, published in January 2025 the message *Stop! In the Name of Life! - Bacteria Exposed to Mobile Phones and WiFi Radiation Become Resistant to Antibiotics.*

In it, he issues the following warning: "Science has already shown that bacteria exposed to mobile phones and wifi radiation are resistant to antibiotics. The implications of this are chilling and can easily explain the ongoing enormous and very frightening development of more and more antibiotic-resistant microorganisms around the world."[30]

All things that we – to put it mildly – should not want.

The RIVM financed a literature study by Leiden University in 2013. It concerned an analysis of 113 studies on the effects of EMF on animals, trees and plants.[31] What turned out? In two thirds of the studies, negative effects were observed at very low radiation levels in animals, trees and plants and disturbances in development and reproduction in birds and insects.

General effects that emerged in these studies related to growth, development, fertility, reproduction and behavior and stress level. For example, the white stork turned out to have 40% less breeding success within 200 meters distance from an antenna; the young of the blue tit and great tit under the influence of radiation were less dominant,

which indicates stress and tadpoles at 140 meters distance from an antenna suffered from movement/coordination problems, growth disorders and 90% mortality.

These conclusions were reason for the scientists of Leiden University at the time to call for similar experiments and field studies to be carried out by other groups. No heed was given to this.

Under the leadership of the late botanist Mark Broomhall, a biodiversity study was conducted in the period 2000-2015 in the pristine Gondwana nature reserve in Eastern Australia (Mount Nardi Nightcap), an area where there is hardly any human activity.[32]

It was investigated what impact the arrival of 3G and 4G transmission masts respectively would have on the animals in the area.

Prior to the research, a baseline measurement was carried out, the conclusion of which was that biodiversity increased before 2000. Between 2000 and 2004, 3G transmission masts were placed with the result that insect diversity decreased. When improved versions of 3G were installed between 2006 and 2009, the researchers saw 27 bird species leave the area. Between 2012 and 2013, new 4G transmission masts were built.

Immediately afterwards, another 49 bird species had disappeared and all locally known bat species had become scarce. Insects, moths, butterflies, frogs, toads and ant species also disappeared.

End result

Bats:	3 species become rare/disappeared.
Birds:	88 species become rare/disappeared. 86 species exhibit unnatural behavior.
Frogs/Toads:	Disappeared.
Insects:	80-90% decline general insect population; moths, butterflies, ants and bees become rare.

An obvious question is: how did the researchers know that the animals had not fled en masse for something else? That could indeed have been the case, were it not that the area from which the animals disappeared was within a radius of three kilometers around the transmission masts. Outside of that, nothing had changed. The final conclusion of the research is devastating:

“The placement of transmission masts on Mount Nardi has had a devastating impact over the past 15 years. Wireless technology is a silent killer. It causes genetic decline on an ever-expanding scale.”

Because the Australian nature area is on the World Heritage List, Broomhall decided to offer the research results to UNESCO. However, there was no response. Arno Thielens from the Department of Information Technology of Ghent University published in 2021 the conclusions of a literature study carried out at the request of the European Parliament. Thielens’ team discovered that artificial radiation can cause temperature rise in animals and plants and thus can lead to biological effects.

The scientists stated that there were “fewer indications” for effects on development, genetic material or behavior and that research on the consequences of 6 gigahertz and higher (this is the spectrum used for 5G) is “very limited available”. Thielens’ recommendation was to do further research, including field studies, but the European Parliament has ignored that.[33]

The same year, researchers from the University of Washington and Johns Hopkins University published a three-part study that came to alarming conclusions. For example, part 2 of the study showed that mammals, birds, insects, amphibians, reptiles, microbes and many types of flora experience serious adverse effects from EMF.[34]

According to the study, radiation not only disrupts the orientation and migration of animals, but also foraging, reproduction, mating, nest building, territorial maintenance and defense, vitality and lifespan and survival of many species. This is because ecosystems are connected to the natural electromagnetic fields of the earth, which are disrupted by artificial EMFs.

According to the researchers, radiation should therefore be designated as “a new form of pollution”. They state that even very low radiation levels have negative effects on the health of various mammals, birds, bees and microbes.

“There is a large knowledge gap between those who create the technology – physicists and engineers – and biologists who deal with living systems,” warns lead author B. Blake Levitt.

“As long as that gap is not closed, it is very possible that we continue to cause damage to non-human species, without being fully aware of the causes. Moreover, 5G is essentially different from everything we have created in exposure so far.”

“There is no hard scientific evidence for damage from EMFs to wild plants and animals, but there are all kinds of indications. It is therefore to be hoped that scientists will quickly set up properly executed experiments of sufficient size. Especially when it comes to 5G,” reported *VVM-Magazine* of the Association For Environmental Professionals in May 2023 in the article *Effects of radiation on flora and fauna of the theme issue Electromagnetic Fields*.

Is it not, given the many studies that are already there, high time to place this subject at the top of the agenda of policymakers and interest organizations instead of ‘hoping’ for further research?

Is it not strange that there is no exposure limit for flora and fauna or that municipalities do not carry out environmental impact assessments (EIA) for the environmental factor that is radiation? Is it not reprehensible that an institution like the International Commission on Non-Ionizing Radiation Protection (ICNIRP) that advises the exposure guideline and government advisory bodies like the Health Council, GGD, the RIVM and the Knowledge Platform EMF (information body for citizens) do not deal with these risks?

ICNIRP thinks that research should be done on the effects on flora and fauna, but “there is no money” and “it is not important enough”.

In the advisory reports published by the Health Council for the government, not a word is mentioned about the risks for flora and fauna.

The GGD states bluntly: “When it comes to nature and animals, we do nothing with that at all. Maybe a gap, but we are about the health of people.”

The Knowledge Platform EMF also looks the other way: “Effects on flora and fauna are outside our field of work. We are not sufficiently aware of research that has been and is being conducted on this.”

Moreover: general secretary Monique Beerlage claimed in 2020 that no research has ever been done on the effects of radiation from transmission masts on cows or other animals: “There has simply never been a reason to do research on that.”[35]

It would not be wrong if Beerlage took a look at the overview pages *Impact to Wildlife, Wireless & The Environment* of Environmental Health Trust or *Environment and Wildlife Effects* of Physicians for Safe Technology.[28, 36]

The sad conclusion is that the many independent scientific studies in which a wide spectrum of risks for flora and fauna is established are completely disregarded in the exposure limit, the advice to the government and the information to citizens. The realization that nature and biodiversity are vital is completely lacking.

FOTO?

Chapter 11

And the digitalization continues …

Digital animals and plants?!

Meanwhile, digitalization also appears to be the highest good in the animal and plant world. Dairy farmers who tie sensors around the neck and ankles of their livestock to register everything, including how much the animals stand, lie, or graze. Dairy farmers who, to increase milk production, put virtual reality glasses with images of fresh green meadows on the animals.[1, 2]

British robot scientists who are working on the development of robot bees to enable egg-laying to happen at the right moment.[3] "Then we get healthier offspring and more active, healthier bee colonies."

And what about the Internet of Small Animals (IoSA): ultra-light trackers with which the activities of wild birds, rodents, bats, and toads can be monitored?[4]

Or the Internet of Underwater Things (IoUT): smart seas and ditto oceans full of underwater sensors that communicate with each other and with transmitters/receivers on the water surface and then forward the signal to satellites and/or 4G-/5G- infrastructure on land?[5]

Or the I-Wood: a Wood Wide Web of artificial plant roots and fungi, with the noble goal of keeping the ecosystem healthy and gaining insight into how to better protect and grow the natural networks.[6]

The American space agency NASA claims, in collaboration with the companies Intuitive Machines and Nokia, to have even laid a 4G network on the moon by early 2025.

"Not only so that astronauts there can watch videos undisturbed, but especially for ultra-fast communication and for scientific research. Being able to communicate on the moon is just as crucial as power, water to drink, and air to breathe," explains Walt Engelund, deputy director at NASA's space technology directorate in an article on the news page of the Belgian site vrt.be.[7]

Data centers and sustainability, do they go together?

Many people actively strive to contribute to a greener future. We live as energy-efficient and water-saving as possible: turn down the heating or even turn it off completely, shower shorter, install solar panels on our roof, etc.

However, what many do not realize is that data consumption has increased by no less than eighty percent since the rollout of 4G in 2014. The arrival of 5G in 2020 has again caused a significant increase in data traffic. To store all the data, more and larger data centers are being built that consume gigantic amounts of power.

More and more data leads to ever-increasing energy consumption. 5G is therefore anything but a 'green connector', as for example KPN likes to portray it. But it is not in the interest of the telecom industry to make clear how unsustainable wireless technology actually is.

All sustainability stories about possible 'smart' savings, because for example street lamps, thermostats, and cooling installations turn on or off by themselves notwithstanding, the placement of at least five times more antennas, which are needed for good 5G coverage, the extra required data centers, and the Internet-of-Things (IoT) will only increase electricity consumption.

Problems around energy and power supply will therefore only increase in the future. And that while power grids are already at their maximum capacity and, for example, extra charging points for electric cars already pose a problem.

Drinking water consumption is also coming under considerable pressure due to the ever-increasing data consumption. For example, did you know that the 'air-cooled' Microsoft data center in Wieringermeer in North Holland used no less than 84 million liters of drinking water in 2021 to cool its servers? That is more than four times more than the twelve to twenty million liters of water that Microsoft claimed to have used that same year.[8]

The European Commission in Brussels started working in 2025 on a plan to make data centers more sustainable with the expectation that it would be completed a year and a half later.[9]

Suggestions for policymakers and interest organizations

On the website of the Knowledge Platform Electromagnetic Fields (KPEMV – government agency for people with questions and concerns about radiation) it is reported that there are no exposure limits for flora and fauna: "The International Commission of Non-Ionizing Radiation Protection (ICNIRP – the agency that has advised the exposure guideline) says nothing about the protection of animals, plants, and ecosystems."

A working group was reportedly established in 2020 to address this issue and make statements about it. "If possible, the working group will also analyze whether the current guidelines for human exposure also provide sufficient protection for plants and animals in their natural environment."

At the time of writing, however, not much has come of it.[10]

The government can take measures by establishing a radiation exposure limit for flora and fauna. There is none as of 2025.

Municipalities can draw up a local antenna policy and carry out zero measurements and EMF environmental impact assessments (EIA). That is a gap in the policy.

Government advisory bodies such as the Health Council, GGD, the RIVM, and the Knowledge Platform EMF could take a (pro-)active stance.

Nature organizations can compile web pages and information folders and invite experts to give presentations.

> "The future will be green, or not at all. This truth lies at the heart of humankind's most pressing challenge: to learn to live in harmony with the Earth on a genuinely sustainable basis."
>
> — Jonathon Porritt

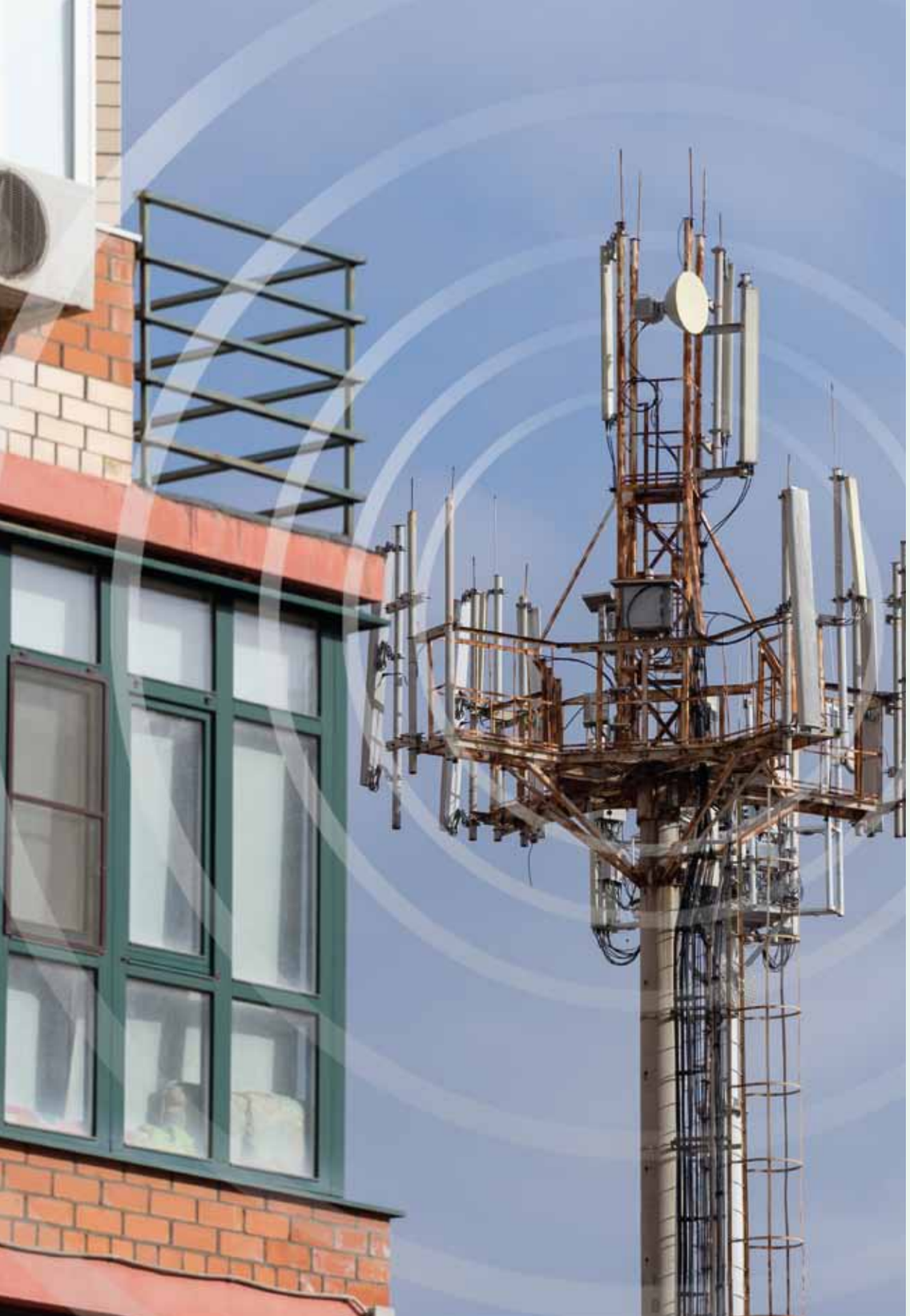
Appendices

1 Wireless for dummies – a concise look at how it works

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Appendix 1

Wireless for dummies – a concise look at how it works

We actually cannot talk about wireless radiation without using a number of technical terms. In this appendix, the most important ones come up.

Rest assured, I have done my utmost best to explain the basic principles on which wireless technology functions in understandable language. If you don't feel like delving into this, you can of course just skip this part.

Explanatory Terms and Abbreviations

Electromagnetic radiation: radiation built up from electromagnetic waves. Examples: radio waves, microwaves, infrared, visible light, ultraviolet, X-ray and gamma radiation.

Electromagnetic fields (EMF): another term for electromagnetic radiation.

Electromagnetic: a combination of an electric and a magnetic field.

Radio waves: collective name for electromagnetic waves that occur between one hundred and three hundred billion times per second.

Radio frequency radiation: collective name for electromagnetic radio waves.

Hertz (Hz): the unit of frequency with which the number of waves per second is expressed. 1 hertz = 1 wave per second.
Example: a wave that occurs six times per second has a frequency of six hertz.

kilohertz (kHz):	1,000 waves per second
megahertz (MHz):	1,000,000 waves per second
gigahertz (GHz):	1,000,000,000 waves per second

Frequency band: a contiguous range of certain frequencies.
Example: 26.1 – 26.9 Hz. (= 26.1 – 26.9 waves per second).

Low frequency (LF):	from 100 kHz
High frequency (HF):	3 – 30 MHz
Very high frequency (VHF):	30 – 300 MHz
Ultra high frequency (UHF):	300 MHz – 3 GHz
Extremely high frequency (EHF):	3 GHz – 300 GHz

1G, 2G, 3G, 4G and 5G: five successive mobile networks where the letter G stands for 'Generation'. 1G is thus the first and 5G the fifth generation of mobile networks. The higher the generation, the higher the number of artificial electromagnetic waves in our living environment.
1G – 450 MHz and 900 MHz
2G – 890 MHz and 1800 MHz
3G – 900 MHz and 2100 MHz
4G – 700 MHz, 800 MHz, 1800 MHz, 2100 MHz and 2600 MHz
5G – 700 MHz, 1400 MHz, 2100 MHz, 3.5 GHz and 26 GHz

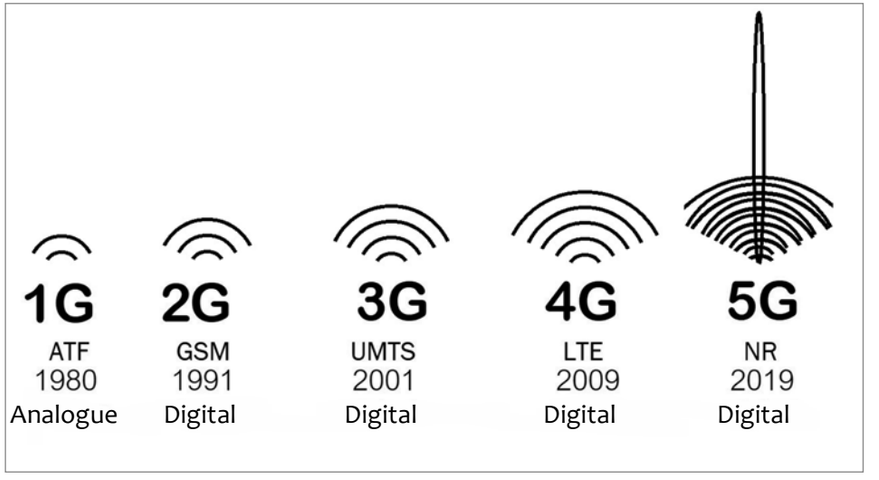


Fig.: The MeetMEES

SAR value: Specific Absorption Rate value. The unit that expresses how much radiation is absorbed in the body tissue during the use of a mobile phone.

Watt per square meter (W/m2): the unit that has been used by the government since mid-2020 to indicate the exposure limit for electromagnetic fields from antennas and wifi. Until then, the limit was expressed in Volt per meter (V/m). This unit concerns the power density of the electromagnetic field.

Volt per meter (V/m): the unit that was used until early 2020 to indicate the exposure limit for electromagnetic fields from antennas and wifi. This unit concerns the electric field strength.
Since the rollout of 5G in the Netherlands, mid-2020, the exposure limit is indicated in Watt per square meter (W/m2).
The conversion aid for electromagnetic fields from the Antenna Bureau can be helpful here.[1]

Ionizing radiation: radiation that has so much energy that it can change atoms (this is called 'ionizing'). Examples: X-ray and radioactive gamma radiation.

Non-ionizing radiation: radiation that has insufficient energy to change atoms. Examples: microwave radiation and radiation from mobile phones.

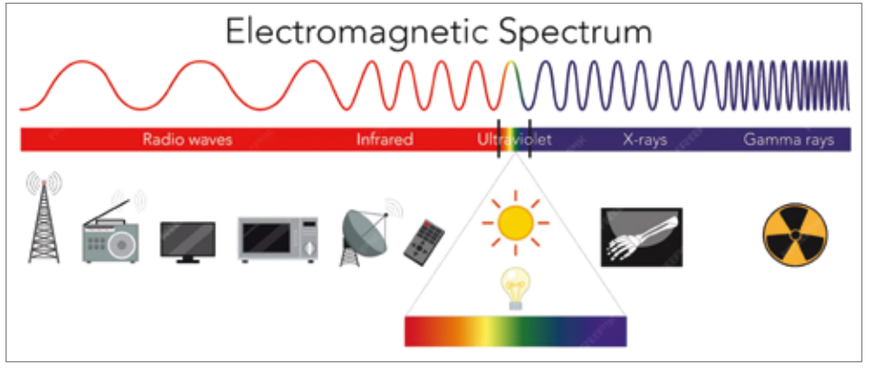


Fig.: freepik.com

Large and small waves

The heat from an infrared patio heater, the radiation in a microwave that heats your food, or the X-rays that take a photo of your bones in the hospital.

These are all forms of electromagnetic radiation. This radiation consists of a combination of electrical and magnetic energy that together form waves. Those waves move at lightning speed through the air, a bit like ripples in the water.

How does that work with waves?

The waves of electromagnetic radiation have different speeds, or frequencies. The frequency is the number of waves that occur in one second. This is measured in hertz (Hz). A low frequency means few waves per second, such as with a radio (kilohertz-kHz). A high frequency means a lot of waves per second, such as with your wifi or mobile phone (gigahertz-GHz).

Where does electromagnetic radiation come from?

Electromagnetic radiation is naturally all around us. The sun is the most well-known example of that. The radiation from the sun has a frequency of 400,000 to 750,000 gigahertz (GHz). That is 400,000,000,000,000 to 750,000,000,000,000 waves per second.

The Schumann frequency (natural frequency of the earth) and the frequencies of our brains are other examples of natural electromagnetic radiation. This involves 1 to a maximum of 100 Hz. Without these natural radiations, there would be no life on earth!

But we also create radiation ourselves with devices, such as radios, mobile phones, and wifi routers. This artificial radiation is different from natural radiation because it is often sent in specific patterns to transmit information, such as your apps, photos, or videos.

How does wireless communication work?

Wireless communication, such as with your phone or wifi, uses electromagnetic waves as a kind of invisible highway. Over that highway, devices send digital information in small 'packets'.

These packets are short, fast waves that are sent a few times per second. This is how you send a message or *stream* a video, for example. This technology is very different from natural radiation because it happens so quickly and in such specific patterns.

Non-ionizing – not harmful?

It is claimed that this type of waves has no biological effects because they are non-ionizing. This is a term we unfortunately cannot avoid when talking about wireless radiation. Ultraviolet light and X-ray and radioactive gamma radiation have such a powerful transmission power that they can knock an electron out of the outer shell of an atom. This is called 'ionizing'.

The transmission power of wireless radiation is not powerful enough to directly detach an electron from an atom and is therefore called non-ionizing. Based on that, it is stated: because wireless radiation is non-ionizing, it is not harmful. The radiation from the microwave is non-ionizing, but it is harmful to health. So it's not really a straightforward story.

(In part II *Is radiation harmful?* you have discovered to what extent that conclusion is correct.)

If we want to do it completely correctly, we should actually refer to wireless radiation as 'pulsating fields of artificial, non-ionizing, high-frequency, electromagnetic radio waves', but that's of course not feasible.

Exposure limit

Exposure to electromagnetic fields would be safe, provided it remains below the exposure limits.

(In part II *Is radiation harmful?* you have discovered how these limits were established and whether they are indeed safe.)

When we talk about the exposure limit of mobile phones, we use the term SAR value. A mobile phone may only be brought to market if that value is lower than 2 Watts per kilo (W/kg) body weight. For exposure

of limbs only, the SAR value must be below 4 Watts per kilo. The lower the SAR value, the less radiation the body absorbs during the use of the phone.

Because the SAR value differs per phone model, it is important to compare the values of different models before making a purchase. You can go to the website of aHealthylife.nl for that.[2]

The exposure limit for the electromagnetic fields of antennas is expressed in Watt per square meter (W/m2). There are different limits per frequency band. The limits range from 2 W/m^2 to 10 W/m^2. For exposure to the electromagnetic fields of beamforming (a transmission technique related to 5G – see chapter 8: *5G, what does that bring?*) a limit of 40 W/m^2 applies. However, this is generally not reported by the involved agencies.

Frequency	Most used application	Exposurelimits (in W/m^2)
30 - 400 MHz	Radio-station	2 W/m^2
700 MHz	5G	3,5 W/m^2
800 MHz	4G	4 W/m^2
900 MHz	2G, 3G	4,5 W/m^2
1400 MHz	4G	7 W/m^2
1800 MHz	2G, 4G	9 W/m^2
2100 MHz	3G	10 W/m^2
2400 MHz	wifi	10 W/m^2
2600 MHz	4G	10 W/m^2
3,5 GHz	5G	10 W/m^2

Fig.: Antennebureau.nl



Appendix 2

The Wireless Fairy Tale: How to Sell ... an Unhealthy but Addictive Product (Based on Truth)

by Drs. Ayna Siem

In a small country by a cold sea, there once was a wizard who had brewed a magical drink. The potion was divine, irresistibly delicious and highly addictive. If that came to market, he would certainly become a multimillionaire in the shortest time. There was just one drawback: the secret ingredient was poison. It would slowly and unnoticed undermine everyone's health. So the question was: how to sell this?

The wizard searched in his network and found a clever marketing man and a lobbyist. "We are going to set up a sophisticated marketing strategy," said the marketing man, "leave that to me." And the lobbyist added: "And I will work on the right people. Leave that to me."

First, they ensured a kind of scientific basis, to which they could always refer. Flimsy indeed, but by the time someone realized this, the addiction and dependency were already so far advanced that no one would care anymore. For the kind of scientific test, they took a hollow doll with an empty, plastic head. That would serve as the average human head.

On top of the head was an opening with a cork in it. They poured it full to the brim with the magical poison drink. Then they looked for 6 minutes at what effect that would have. Nothing happened at all,

nothing, the head was unaffected. The conclusion was therefore: the drink is harmless. For safety, they also filled the rest of the hollow body with the poison drink and it held 16 liters.

To give their sales strategy the necessary space, they decided the safe limit to set arbitrarily at 10,000 liters per person per day. If you stayed below that limit, everything was safe, so was their reasoning.

“What should we do with critical questions from smart people?”, asked the wizard.

“We will refer to this research and this safe limit”, answered the marketing man.

“But what if smart people see through this research and keep asking questions?”

“Then we refer again to this research.”

“And what if real thorough scientific studies come?”

“We will strictly deny or ignore them, and keep referring to our own research.”

That was the best tactic, they decided.

Furthermore, they had to acquire the necessary licenses to sell the drink. For that, they paid the government a substantial amount, on the condition that the government would ensure that they were not hindered in any way.

The commercial trio closed a deal with the Minister of Economic Affairs and Climate that she would pave the way. (Economic Affairs and Climate?! Certainly, what is good for the economy is automatically also good for the ‘climate’.)

The next step was to further build a kind of solid basis. It was not difficult for the lobbyist to find a number of scientists and CEOs and an information officer willing to work for them in exchange for a good salary. They called themselves the IKNIRP (I Not ResPonsible) and the Health Council, with a spokesperson who got circles under his eyes. Also the loyalty of the press and social media like Facebook and YouTube were bought to support the story.

In *no time*, (almost) everyone was addicted to the drink, more accidents happened on the road, some became sick quickly, the waiting rooms of general practitioners filled with people with vague

complaints and after even more years, seventy-five percent of the population was chronically ill. It even spread to the insects, the bees, the birds and nature, because the poison also ended up in the rivers and in the soil.

“That this went so easily,” laughed the wizard in his golden fist, sitting on his Chesterfield sofa in his spacious villa.

“Well,” said the lobbyist, while looking at his Prada shoes, “I have long ago concluded that people are herd animals. They follow each other blindly, without thinking for themselves.”

“But,” said the marketing man in his 2000 euro tailor-made suit, “It was also brilliant to make them so addicted to the drink that they quickly lost their critical faculties.”

Yet slowly something began to gnaw at their chair legs. The smartest people saw through the plan and did not stop asking critical questions and campaigning. The strategy of keep referring to their own research, the arbitrarily set safety limit and ignoring and denying seemed to work for a long time, but proved no longer sufficient to mislead the smartest people.

The minister did what she could, but became increasingly less credible.

Although the masses still fell for it, the jug could not go to the water indefinitely.

“What do we do now?”, asked the wizard.

They decided to take the profit they could still take and see where the ship would strand.

The Moral

How far can a lie go? Very far. But the truth ...



Appendix 3

Transmitter Radiation and Desired Policy – How Can the Government Make Our Mobile Communication Healthier?[1]

Diagnosis:funk – Kompakt 2025/1:6-9

Transmitter radiation was categorized in 2011 by the WHO as 'possibly carcinogenic'. [1] Based on new, disturbing research results, leading scientists have concluded that the WHO should consider the stricter classification of 'carcinogenic'. [2]

Numerous studies also point to other risks, such as fertility and sleep disorders, headaches, effects on learning and behavior. [3] The scientific studies on this subject therefore point to a serious potential for harm. The technology advice commissioned by the European Parliament (STOA study) [4] from 2021, the German Bundestag (TA report) [5] from 2023 and the advice of the European Economic and Social Committee (EESC, 2023) [6] similarly confirm that research results are available on many medical 'endpoints' that demonstrate risks of transmitter radiation for health.

A precautionary policy and the best possible minimization of radiation are therefore urgently needed, according to the principle: more data with less radiation. With advanced technology, this can now already be realized with an excellent usage quality.

Taking for example the German *Technology Advice* (TA) as starting point, there are numerous measures imaginable in different policy areas.

1. Health Protection

a). The guidelines for protection against low-frequency and high-frequency non-ionizing electromagnetic radiation are redrafted. These serve as the central foundation for all further political measures in the field of wireless policy and are based on the currently applicable guidelines of the radiation protection agency. In Germany, that is the BfS (Bundesamt für Strahlenschutz). [7]
The scientific findings on both the thermal and the non-thermal damage potential of this radiation are included equally in the guidelines. This happens with the cooperation of scientists from all disciplines and organizations from civil society, as proposed in the TA report.
The TA report also criticizes the previous exclusive focus on the recommendations of the advisory group ICNIRP. [8] The recommendations of the very expert committee ICBE-EMF [9] therefore receive equal attention. The guidelines are based on a precautionary policy based on the Bradford Hill criteria. [10]

b). The limits for electromagnetic fields (EMFs) as specified in the latest regulation for radiation protection will be adjusted to what is proposed in the TA report. This will happen on the basis of the newly established guidelines for radiation protection and thus on the basis of the latest scientific findings on thermal and non-thermal biological effects.

2. Infrastructure and Standards

The TA report recommends the development of technical standards and techniques with lower emissions to minimize the radiation exposure from EMFs of wireless and other sources. Examples of such technologies and standards are:

a). National *roaming or net sharing:* one network for everyone. Until now, providers have operated separate networks next to each other (in the Netherlands currently: 2 x 2G, 1 x 3G, 3 x 4G, 3 x 5G – trans.). That is inefficient because every user actually only needs one network. The other networks (which are operated in parallel) thus radiate for nothing and that leads to unnecessary radiation exposure.
If smartphones however work in every mobile network – regardless of the provider – the coverage is improved in one go for everyone: then only one network is needed. There are then also fewer antennas needed for national coverage, new placement is in many cases no longer necessary and the financial and usage-related costs (resource) for the required infrastructure come out lower. The result: better accessibility, less energy and less radiation. National *roaming* must be an option in the inspection for digital infrastructure and the relevant authority for consumer and market.

b). Small cell networks (small cells)
So far, the antennas of mobile telecom (macro cells) cover large areas and radiate so strongly that the coverage is still guaranteed at the edge of each cell (through multiple buildings). This leads to a very high radiation exposure, especially near an antenna.
In small cell networks, the transmitters are much closer to the user and only transmit along the streets, no longer through buildings. This significantly reduces the radiation exposure and thus a health-acceptable value of 100 µW/m2 (100 microWatt per square meter – trans.) on the exterior facade can be achieved.

The supply security outside remains guaranteed anyway. Inside, other networks are available, see *Interoperability* (point 3a).

c). Sealed expansion of fiber optics – Fast internet forms a public service for all people; it is the basis of communication for the economy and society. This is exactly what fiber optics offers. And that is not harmful to health, because there is no radiation. Fiber optic networks are therefore the future. They must come into municipal hands and providers can then rent on them without mutual distinction.

d). LiFi – light instead of wifi for wireless data transmission. Many scientific studies show that wifi radiation is harmful to health. [11] The healthy alternative is called Light Fidelity (LiFi). Here, data is transmitted via light or infrared LEDs. Our body is accustomed to light and infrared.
This technique is therefore not only harmless to health, [12] but also faster than wifi, eavesdrop-proof and is now ready for series production. [13] The dissemination of LiFi technology must be promoted, for example for use in schools. The government can make the funds for digital education available for this and specifically increase for LiFi.
At the same time, the funding for wifi equipment in schools will be stopped for health reasons. Other places where LiFi can be used are public transport, hospitals and other public facilities. In the future, even all street lamps come into view and thus also outdoor services. The national and local governments must set the good example here.
Manufacturers will then design their end devices so that they are suitable for LiFi and then society will follow this development (just like with other trends in technology).

e). Precautionary concepts mobile communication – Municipalities can have a decisive influence on the construction of infrastructure for mobile communication by starting a specified dialogue procedure. This provides for determining the location with the lowest emission for new transmission masts.
This is a right that must become an obligation for all municipalities in a precautionary concept for mobile communication [14] (analogous to, for example, protection against noise) to strengthen health protection throughout the country. Local governments are also obliged to strengthen emission control in other areas for which they are responsible (in addition to the infrastructure for mobile communication, e.g. wifi or DECT in administrative environments, public buildings, hospitals, educational institutions).

3. Consumer Protection

a). Interoperability: one device for all networks – How practical would it not be if our (mobile) devices always automatically used the best available, i.e. least radiating network for telephone, emergency calls data connections? In outdoor areas, the mobile telephone network (via national *roaming*) would be an option.
In buildings, coverage remains possible via network cable (possibly also adapter), via DECT, via wifi calling [15] or via LiFi – and all with one and the same device. It is then no longer necessary for mobile accessibility to transmit radiation through buildings (see *small cell networks* – point 2b). The devices must become interoperable for this. That will help to protect private homes from radiation exposure. The national agency for the environment must advocate no longer irradiating buildings in order to save energy. [16] The government should prescribe interoperability for new devices as a technical standard.

b). Wired Connection
All devices that can communicate with the internet have a wired/cabled connection for data transmission (ethernet or USB). Exclusive communication via radiation is not allowed; for reasons of radiation protection, there must always (also) be a cable alternative for communication. If devices, for example, only have a USB connection, an adapter (USB to ethernet) is supplied.

c). Power Control (Eco)
In the future, all wifi devices on the market (routers, end devices) must be adjustable in terms of transmission power (e.g. to 3% of the strength) and optionally automatically switchable off (Eco-wifi). The same applies to cordless DECT telephones (Eco-DECT): they no longer transmit radiation continuously, but only during telephone conversations, and are also adjustable in strength (base unit and handset).
The Eco-DECT mode is their only operating mode; continuous radiation is no longer allowed. The German Environment Agency (Umweltbundesamt) has also established criteria for Eco-wifi (so-called 'Blue Angel'), analogous to the criteria for Eco-DECT [17].

d). Information to the Population
The TA report mentions "more informedness among the population" as a policy option. This includes precautionary-oriented information campaigns about the potential risk of cancer, possible fertility problems and other health risks, for which evidence exists. [18] Special attention is paid to the protection of children and pregnant women. In addition, there are behavioral recommendations for the use of radiating devices, such as keeping sufficient distance between device and body or limiting the duration of use.

e). Age Restriction for Children
For children under 16 years, both the psychosocial consequences and the radiation-related consequences of the use of smartphones, tablets and smartwatches are particularly serious. [19] Therefore, the use of such devices is nationally only allowed for children from 16 years (see the restrictions and prohibitions in numerous other countries).

4. Protection of Minorities

a). Electrohypersensitivity
More and more people are affected by electrohypersensitivity (EHS), caused by continuous exposure to electromagnetic fields. It is the responsibility of the state to guarantee medical care and protection for them. EHS is therefore recognized as an environmentally related disease. Environmental medical services are included in the catalog of statutory standard care.

b). Protected Zones
The TA report mentions the establishment of protected zones, where the use of mobile phones or the placement of transmitters is prohibited or strongly restricted. Therefore, also low-radiation and wifi-free zones will be established in public buildings, hospitals and local and interlocal public transport in order to protect electrohypersensitives – comparable to the protection of non-smokers and considering the framework of accessibility. Low-radiation residential and recreational areas are subsidized by the government and supported in their setup.

c). The right to an analog life in all areas of society is legally guaranteed!

5. Protection of Living Environment and Nature

a). Protected Nature Areas
The harmfulness to insects demonstrated in the laboratory [20] and plants [21] already justifies precautionary measures, especially since insects in nature are also exposed to various environmental pollutants. In nature areas, no more transmission masts may be placed or remain in use. This applies to national parks, nature reserves, Natura 2000 areas and cores of biosphere reserves. Insects do not need radiation, but recovery.

b). Energy Consumption
The introduction of national *roaming* (see above) reduces not only the radiation exposure, but also the energy consumption of mobile communication. The introduction of interoperable devices (see above) means that mobile networks in buildings are no longer needed and that the energy consumption for mobile communication will drastically decrease.

6. Research

a). The EMF-Portal [emf-portal, EMF- PORTAL.ORG] is managed by the Technical University Aachen and has been the reference database of the World Health Organization WHO since 2011 [22], i.e. the internationally recognized database for studies on low- and high-frequency non-ionizing electromagnetic fields. Until 2017, the creation of neutral summaries of studies/research was financed by the Ministry of Environment.
The national government will now commission the EMF-Portal to create such summaries, so that politicians and the public can have an overview of the current state of research. The financing comes from the national budget.

b). Commission is given for studies with electrosensitive persons, as proposed in the TA report. These must create a scientific basis for a better scientific understanding of the symptoms of electrohypersensitivity (EHS).

c). Possible interactions between on the one hand low-frequency or high-frequency electromagnetic fields and on the other hand other environmental polluting factors such as pesticides, climate effects or air pollutants are still completely unknown. However, these must urgently be scientifically investigated, since experiences in eco-toxicology show that such interactions exist and the environment is disproportionately harmed by this.

7. Democratic Participation

a). Risk management is redesigned on the basis of the proposals in the TA report.
Open and broad participation of stakeholders, also from civil society, enables the development of a common understanding regarding the problem. It is important to give the interested or organized public the opportunity to give an opinion before political decisions are taken.

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19. ‘Gefahren für Kinder und Jugendliche – Wissenschaftliche Erkenntnisse und Vorsorgetipps’ [dangers for children and adolescents – scientific findings and prevention tips – trans.], DIAGNOSE- FUNK.ORG.– Overview No. 7: Children and digital media– An educational challenge! [overview 7: children and digital media – an educational challenge! – trans.], DIAGNOSE- FUNK.ORG/UEBERBLICK.

20. ‘Artikelserie: Die Gefährdung von Insekten und Bienen durch Hochspannungsleitungen und Mobilfunkstrahlung’ [threat to insects and bees by high-voltage lines and mobile radiation – trans.], DIAGNOSEFUNK.ORG.

21. Medical/biological studies on animals, plants & environment [medical/biological research on animals, plants and the environment – trans.], EMFDATA.ORG/EN/STUDY-OVERVIEW.

22. Evaluation of the EMF Portal and derivation of findings and recommendations for its further design [evaluation of the emf portal and resulting findings and recommendations for further design – trans.], Research Center for Electro-Magnetic Environmental Compatibility, University Clinic RWTH-Aachen: BMUV.DE.



Appendix 4

Contribution for Ongoing Research on Healthy Living Environment – Court of Audit

The Court of Audit has been working since December 2024 on a national research on a healthy living environment and explicitly asks for submission of contributions[1]:

The Court of Audit writes: “Things are not going the right way with the health of all Dutch people, especially that of people with a lower socioeconomic position. Our life expectancy is falling further behind our surrounding countries and we live shorter in good health. Important causes for this are an unhealthy lifestyle and an unhealthy living environment.

Societal causes of health problems such as poverty, unhealthy food and air pollution damage our welfare with an estimated tens of billions of euros per year.

Measures to remove these causes are often more effective and cheaper than repairing health problems through medical and other care. *Health in all policies* is therefore an important starting point in Dutch health policy.

What are we researching?

The Court of Audit will research from the perspective of broad welfare measures outside care that are aimed at the living environment and that have impact on our health and care expenditures. We want to know if and how health interests are weighed in policy measures outside care, and how effective and efficient such measures are compared to medical care for relevant conditions.

We also want to map out what the possible barriers are to taking effective and efficient measures that can prevent health problems. Think for example of counteracting other interests or constraining budget rules.

Why are we researching this?

Dutch people consider their health the most important thing there is. If things are not going the right way with it, that is a cause for concern.

In addition, we spend more than €100 billion annually on medical and long-term care and support. Care threatens to become unsustainable and unaffordable due to rising care demand. With this research, we want to offer the House of Representatives and cabinet insight into measures outside care that also improve our health and answer the question whether they are taken sufficiently.

Contribute to this research?

The Court of Audit cordially invites you to share information that we can use in our research. We appreciate your contribution, communications or experiences on this subject. You can share information by sending an email to bijdrage@rekenkamer.nl.

We consider all contributions and will treat them with care. However, keep in mind that you will not automatically receive feedback on your contribution."

From the intention to make a substantial contribution to this important research, I sent a contribution to the Court of Audit on May 12, 2025:

Dear Sir/Madam,

First of all, I would like to express my appreciation for this important research.

Below and in the attachments, I send you some documents (among others from the Health Council, the WHO, the RIVM and the International Commission on Non-Ionising Radiation Protection (ICNIRP): the organization that has advised the exposure guideline for the radiation exposure of wireless communication technologies).

These documents appeared in the period **1971-2025.**

Although it is only the tip of a gigantic iceberg, these documents may possibly make an important contribution to your research.

Especially since it concerns a dossier where, due to as you describe it "counteracting other interests or constraining budget rules", the starting point *Health in all policies* has so far been given a rather subordinate place.

The auction of the frequencies for the various generations of wireless networks (2G to 5G) have namely yielded the government a sloppy 12 billion euros so far.

To illustrate how it could also be policy-wise, I would like to ask you to watch this information video (4:42 min.) from 2015. It was made by the Cyprus National Committee on Environment and Children's Health of the Cypriot government.[2]

Finally, I would like to bring these two short videos (both about 10 min.) from 2021[3] and 2024[4] to your attention in which former Microsoft President and co-founder of Canadians for Safe Technology Frank Clegg and Nobel Prize winner Prof. Dr. Olle Johansson – emeritus professor in cell biology, histology and neurobiology concisely articulate the extent of the problem.

I hope that you will give this subject the serious attention in your research that it deserves.

With kind regards,

Sylvia Slegers

ATTACHMENTS:

1971 – Scientific overview archive on biological effects - compiled by Dr. Zory Glaser: research scientist of the US government. In 1971, the archive consisted of 2,000 documents, in 2022 there were 6,000. (Worldwide there are many tens of thousands.) https://zoryglaser.com/zory-archives-date/ and https://zoryglaser.com/

1974 – *Biologic Effects and Health Hazards of Microwave Radiation – Proceedings of an International Symposium* (sponsored by the WHO)

1975 – Health Council report *Advice on the dangers of microwave radiation and the acceptable radiation levels derived therefrom* – Conclusion: At low radiation exposure: many health effects in cells, blood, brains, chromosomes and enzymes.

2013 – Analysis of 113 field studies on animals, trees and plants

Financed by the RIVM, carried out by Leiden University.

Conclusion of two thirds of the studies: significant negative effects at very low radiation levels: 50% in animals and 75% in trees and plants + disruption in development and reproduction in birds and insects.[5]

2016 – Health Council – report *Weighing health in environmental policy* – Conclusion: also health effects below the exposure limit

Advice: apply a stricter exposure limit

2018 – State Gazette of the Kingdom of the Netherlands

Decision quality of the living environment Quote: "Possibly substantial risks to health as a result of radiation."

Source: https://zoek.officielebekendmakingen.nl/stb-2018-292

2020 – Health Council – report *5G and Health*

Conclusion: health risks of 5G unknown – health damage by 5G possible – damage below the exposure limit possible – recognized measurement methods for 5G lacking – research on 5G at 26 GHz lacking.

As possible health effects, the report signals:

a). inducing or promoting tumors;

b). neurodegeneration of brain tissue (ALS, Alzheimer's);

c). male infertility, poorer pregnancy outcomes and birth defects.

2025 – *Effects of radiofrequency exposure to electromagnetic fields on cancer in laboratory animal studies, a systematic review* – partly financed by the WHO.

Conclusion: 'a high degree of certainty' that malignant brain and heart tumors can occur after mobile calling. Also, a 'moderate certainty' was established when it comes to liver and adrenal tumors and a 'possible but inconsistent risk' for lymph node cancer.[6]

That the Court of Audit is not very eager to include these facts in the research, was evident from the response that I received two weeks later:

Dear Mrs. Slegers,

Thank you very much for your interest in our research on the healthy living environment. We take note with interest of your request to pay attention in our research to radiation risks. Although we take this risk seriously into consideration, it is for the time being uncertain whether we can include this in our research. We count on your understanding for this.

With kind regards,

Court of Audit



About the author



Sylvia Slegers lives in Huizen (the Gooi). Since 2020, she has been a board member of the National Platform Radiation Risks. In addition, she is part of the residents' platform EMV (Electromagnetic Fields) Gooise Meren.

As an investigative journalist, she has been writing articles about radiation and 5G with some regularity since 2022 for De Andere Krant. She has bundled some of these articles into two handy booklets that she has self-published: *5G: a revolution, but where does it lead?* and *5G: Safely connected in a sustainable society?* https://www.opnaareenstralendetoekomst.nl/home/11

She also gives presentations and interviews on this subject. She would prefer to see all media give this topic the serious attention it deserves.

The search for the downsides of 'wireless' began around the turn of the century, because Slegers at that time increasingly had question marks about the safety of this technology.

Not least because, in her work as a teacher in secondary education, roughly coinciding with the rise of the mobile phone and wireless internet, she increasingly had students with headaches, insomnia, and concentration problems in front of her.

She wondered if that could be related. That made her decide to dive deeper into the matter, where she stumbled upon a multitude of independent scientific research that confirmed her suspicions. She was quite shocked by that and therefore she has since focused on increasing knowledge about the risks of screen use and radiation.

She focuses on both human health and the scientifically established consequences of radiation for animals, trees, and plants as well as on the many other areas where this development impacts our lives. For example, in the area of privacy.

Slegers is not against technological progress, she is in favor of the development and use of safe and sustainable wireless communication technologies. That this is actually possible is further explained in chapter 9 under *The power of the consumer, More data with less radiation – how can the government make our mobile communication healthier?* and in Appendix 3.

Acknowledgments

I want to thank everyone who, directly or indirectly, has contributed to the creation of this book. Those who deserve an honorable mention here are Ayna Siem for her critical and supportive reading and thinking during the writing process and her original contribution *The wireless fairy tale* (Appendix 2).

Vera Verhagen for conducting and making available her research into the fraudulent practices in the advisory report *5G and Health* of the Health Council.

Jan Vissers for sending the diagnose:funk article *More data with less radiation – how can the government make our mobile communication healthier?* (Appendix 3).

Erik Leemkuil for his valuable advice in writing Appendix 1.

Inge-Willem Noordergraaf, Maarten Fornerod, Ruud Swagemakers, Sander Funneman, David Gee, and Kent Chamberlin for their willingness to write a foreword for this book.



More information?

For those looking for books, brochures, videos, a measurement specialist, patient association, or a petition to sign, here is an overview:

BOOKS

Screen time and smartphone addiction

Free E-book: Addicted to your smartphone? – take back control! Physical complaints due to smartphone use: do you accept this or do you intervene? How do you regain grip on your phone use? What would you do with the time you now waste on your smartphone? Why it's not necessary to get rid of your phone permanently. FOMO ('fear of missing out'): do you suffer from this?[1]

I'm breaking up – a healthy relationship with your smartphone in 30 days

Journalist Catherine Price offers a practical and feasible plan to break up with your phone and then reconcile. In 30 days, you form a new, healthy relationship and become the boss over your own time again! (ISBN: 9789047011279)

Help! I'm addicted to my smartphone!

Is your phone use getting out of hand? And do you want to do something about it? But are you at the same time afraid that your life will be less fun if you put your phone away more often? That you lose your favorite pastime, your 'buddy'? This book by Emma Koning helps

you in 21 days to become increasingly detached from your phone and lets you experience again that moments without your phone are also fun and pleasant. (ISBN: 1230004747321 this is an e-book)

Smartphone Etiquette

125 Golden rules of conduct for using your mobile. Written by Marlous de Haan, physiotherapist, scientist, and expert in the social aspects and physical problems as a result of mobile phone use. (ISBN: 9789492723956)

Wiser with Screen Time – digitally fit through practical tips and challenges

A fan of forty cards for everyone who wants to deal more consciously with their screen time. Developed by physiotherapist and scientist Marlous de Haan.[2]

Protect time – on the way to digital balance in your family

Do you also grant your child more screen-free time, but have no idea how to approach that? Of course you know that too much screen time is not good, but what exactly are the physical and mental consequences? And how do you as a parent keep a grip on the online life of your child? Screen time coach Marloes Jonker shows in an accessible and nuanced way how to deal healthily with digital media in your family. She shares recognizable examples and practical tips that every parent can help. (ISBN: 9789020609332)

Screen Kids – 5 social skills that every child needs in a world full of screens

A book by Gary Chapman and Arlene Pellicane with tools that you need to use technology in a healthy way and teach your kids to handle it properly. (ISBN: 9789083121932)

Digital upbringing - everything about screen time, social media, and media literacy for parents with children aged 0-12

Media educator Marije Lagendijk shows that 'digital swimming

lessons', as she calls media education, is sorely needed and how to ensure that children don't go under online. With recognizable cases and clear advice, she points out the risks but especially also the advantages of digital developments. Those who start with digital upbringing in time prevent phones, games, and social media from becoming a problem. (ISBN: 9789464043495)

Unleash your child's brain – from screen addiction to digital freedom

Practical tips from neuropsychiatrist Theo Compernolle on how parents can teach their children to deal healthily with digital media. (ISBN: 9789401483506)

Asocial Media – how socials manipulate you and how you escape their grip

Psychologist Thijs Launspach investigates the influence of social media on our mental health. (ISBN: 9789000387236)

I love/hate smartphones - the gigantic influence of that small device – e-book

Journalist Arnoud Wokke answers questions like:

How come we have become so dependent on the smartphone in just a few years? Is it good that we are in contact with family, friends, and colleagues all day long? Don't we go completely crazy from all those vibrations? Does smartphone use have dangerous consequences for our health? What will it do to the skills and worldview of our children? What is the etiquette around using a smartphone?

(ISBN: 9789000347629)

Generation Anxiety Disorder – what social media does to our children

Social Psychologist Jonathan Haidt describes how social media and smartphones contribute to the global mental health crisis among youth. (ISBN: 9789025912673)

Is everyone addicted? – an analysis of our digital behavior

With digitization, the supply of addictions has increased enormously. From PlayStation to texting, from step counter to Instagram – really everything we do online seems to have a strong attractive effect on us. Almost everyone looks at screens more than he or she would like; no one can do without a smartphone anymore. But does that make us all addicted right away?

A captivating and sharp analysis of the consequences of digitization, but also a critical interpretation of the current time. Written by journalist and philosopher Doortje Smithuijsen.

(ISBN: 9789403192819)

Living without smartphone stress - why our permanent smartphone use is dangerous and what we can do about it

The German scientist Alexander Markowetz investigated how the smartphone appeals to our subconscious, influences the chemistry in our body, and constantly interrupts our actions. This book not only makes us aware of the consequences of our digital addiction, but especially shows how we can do it differently and how we benefit from it. (ISBN: 9789401605243)

Digital Detox – a philosophical quest for everyone with a smartphone

Philosopher Hans Schnitzler provides answers to questions like: Are we indeed all turning into smartphone zombies? And if so, what exactly does that mean? Are we becoming less sensitive, are we addicted, do we have less attention for each other? Is the smartphone still in service to us, or are we in service to the smartphone? (ISBN: 9789403130385)

Small philosophy of digital abstinence

A book by Hans Schnitzler full of interviews about what happens when you suddenly go offline in a world that is always online. Can you still find your way? If you put your phone aside, what comes in its place? Do you still have friends? Do you still exist? (ISBN: 9789023477280)

A year offline

Bram van Montfoort takes you into the life of Bram. This 24-year-old online man constantly walks around with his iPad, is on Twitter, Facebook, and LinkedIn, visits YouTube and Spotify daily, has a Gmail account, and constantly receives new emails, tweets, messages, likes, requests, notifications, and beeps. In an attempt to get rid of his addiction, he goes offline for a year.

(ISBN: 9789048850532)

The tech coup - how tech has come to rule and we regain power

A at times blood-curdling description of how we lost control over Big Tech and how we can regain power.

Written by politician and privacy expert Marietje Schaake who has been teaching at and is director of the Cyber Policy Center of Stanford University in the heart of Silicon Valley since 2019.

(ISBN: 9789045046624)

Who's Raising The Kids?: Big Tech, Big Business and the lives of children

In this book, Susan Linn – one of the world's leading experts on the impact of Big Tech and big business on children – describes how Big Tech hijacks childhood and what we can do about it. (ISBN: 9781620972274) English.

Health effects of radiation

Science

Uncontrolled Irradiated – health risks 5G not protected

Ing. Jolanda van den Berg (ISBN: 9789465200538)

Radiation viewed from all sides

28 authors, edited by ir. Henk Kieft and drs. Sander Funneman (ISBN: 9789464184099)

The future of the future
5G Summit, bundle of interviews (ISBN: 9789403642277)

Unprecedented Science – early reports on biological effects of non-ionizing radiation
Magda Havas (ISBN: 9789403748740)

5G: a revolution, but where does it lead?
Sylvia Slegers.[3]

5G, safely connected in a sustainable society?
Sylvia Slegers.[4]

Electrosensitivity

The unauthorized disease
Renate Haidlauf (ISBN: 9789403785226)

Everyday radiation nuisance
Susan Pockett PhD (ISBN: 978903658797)

Health complaints due to radiation
Jolanda van Dam (ISBN: 9789020214741)

The wireless cage, sick from electrosmog
Chantal Halmans (ISBN: 9789077024836)

Radiation sensitives - are we at the beginning of a health catastrophe?
Jérôme Bellayer (ISBN: 9789057189081)

Lost the thread for a moment
Danny Hartkamp (ISBN: 9789403627090)

Black on white - open testimonies from the Swedish experience with electrosensitivity
Rigmor Granlund-Lind and John Lind (ISBN: 9789403753621)

How do I find a healthy home? - a step-by-step guide for renting or buying a low-radiation house
Jeromy Johnson (ISBN: 9789403709741)

Everything about radiation – how to stay healthy?
Yvonne Sangen and Karin Tazelaar (ISBN: 9789020210835)

Foreign books

Overpowered
Martin Blank PhD (ISBN: 9781609805098)

Dirty Electricity: Electrification and the Diseases of Civilization
MD Samuel Milham (ISBN: 9781938908187)

5G- Wahn(sinn) - Die Risiken des Mobilfunks - Das gefährliche Spiel mit den Grenzwerten - Die strahlungsarmen Alternativen – e-book
Prof. dr. Klaus Buchner (ISBN: 9783863746100)

Overview page – English-language books on environmental health and electromagnetic radiation.
Themes: reducing radiation exposure; how do I create a healthy living/working environment; screen time and mental health; the risks of electromagnetic fields for humans and the environment; manipulated science and other tactics of the telecom industry; and more.[5]

Bees, trees, and biodiversity

The invisible rainbow – a history of electricity and life
Arthur Firstenberg (ISBN: 9789492665744)

Electric Ecosystem
Drs. Sander Funneman and drs. Anne-Marie Meevis
(ISBN: 9789402198515)

Electric Context
Drs. Sander Funneman and drs. Anne-Marie Meevis
(ISBN: 9789464353204)

Radiation under Supervision –
Pilot project Baseline Measurement Veluwe
Dr. Saskia Bosman, drs. Sander Funneman,
and dr. ir. George Remkes
(ISBN: 9789464351262)

Radiating Trees
Drs. Sander Funneman and ir. Henk Kieft (ISBN: 9789464654615)

Electric life – The astonishing role that electromagnetism plays in ... everything
In this book, Sander Funneman takes us into the wonderful world of natural electricity – which existed billions of years before the invention of the light bulb.
(ISBN: 9789493166950)

FOLDERS/BROCHURES

Health effects of radiation

Honest about radiation, 5G6

Are you pregnant, do you want to become pregnant, or do you have a baby? Be careful with radiation![7]

Stichting EHS[8]

Visit StopOverdosisStraling, health complaints[9]

Advice piece 'Electromagnetic radiation including 5G – how wisely and safely to deal with wireless technologies, with respect for people, animals, and privacy'[10]

Diagnose:funk magazine Kompakt (appears four times a year)[11]

Visit Stop 5G, stay connected, but protected[12]

Bees, trees, and biodiversity

Bees, trees, and biodiversity in the smart society – what do experts say about the risks of wireless for flora and fauna?[13]

VIDEOS/IN THE MEDIA

Screen time and smartphone addiction

Screen battle (series) – KRO/NCRV
Of all young people, 62% say they are addicted to their smartphone. Journalist Doortje Smithuijsen dives into our digital habits. Together with experts and seven young people who take on the challenge to put their phone away for a week, she searches for answers to the pressing question: are we massively phone addicted?[14]

Smartphone-free Growing Up - BNNVARA
Worldwide, parents are uniting to advocate for a smartphone-free

youth. In the Netherlands, actress and mother Thekla Reuten leads the troops. We ask her at what age a child should get a smartphone and how harmful such a device actually can be. One thing is clear: this battle will not be simple. Alexander Klöpping and Steven Pont also join to tell how addictive smartphones and apps are.[15]

Why is my phone so addictive? - RTL Nieuws

Also have such trouble putting your smartphone away? That's not surprising. Companies like Facebook know exactly how to make us addicted.[16]

Boy shocked by phone screen time – De Telegraaf

Young people spend an average of more than two hours a day on social media. But when are you really phone addicted?[17]

Under the Thumb – how your phone keeps you in its grip – NOSop3

In your left hand a glass, opposite you a good friend. He talks, you look at your right hand. After a while, you feel you need to react. "Yes", you say. You are listening, but actually not. You put your phone away. You were distracted, for the umpteenth time that day.[18]

How do you know if you have a phone addiction? – When you can't do without anymore – SchoolTV group 6-8

Many children think they use their phone a bit too much, but that doesn't make you addicted right away. With a phone addiction, you can't do without your phone anymore.[19]

Then you are really PHONE ADDICTED | CHICA - NPO Zapp

Would you call yourself phone addicted? And how much screen time is normal? This week CHICA is about phone addiction. Ariên, Isa, Roya, Evanne, and Juultje chat about their favorite apps, whether they consider themselves phone addicted, and about their high or just low screen time.[20]

'Kneel and say SORRY KING' – NOS Stories

Young people who become victims of humiliation videos often suffer a lot from it. Shame, feelings of guilt. "It might be even more intense because it's all shared online. It's everywhere, spreads very quickly, and you actually don't know who all sees it", says HelpWanted. The organization also supports young people in getting videos offline. NOS Stories spoke to multiple young people who experienced this.[21]

"It's like with cigarettes: if the government doesn't interfere, little changes": experts ask for stricter smartphone policy – VRT NWS

Seventeen experts and psychiatrists ask in an open letter to the Flemish and federal government for a clearer and stricter policy around smartphone use among children and young people. Among them big names such as neurologist Steven Laureys, psychiatrist Dirk De Wachter, and child and youth psychiatrist Binu Singh. They also advocate for a ban on social media until the age of 16. The experts emphasize the negative impact of smartphones on the brain and emotional well-being of children and young people. "Our main request is a debate", says child and youth psychiatrist Kristel Lauwers in VRT NWS Journaal.[22]

Should we raise young people smartphone-free? – KRO/NCRV

Are smartphones indispensable in the lives of young people? Or would they be better off without? The mental health of young people, especially girls, has deteriorated worryingly fast in recent years. This roughly coincides with the rise of smartphones and increasingly addictive social media, but does this also have a causal connection or are other factors more important?[23]

Health effects of radiation

More videos
https://www.opnaareenstralendetoekomst.nl/
and https://5gisnietoke.nl/

Dutch videos

Everything about radiation – eight short videos
https://www.youtube.com/playlist?list=PLeZjmBL_4__S7wLJ_wWftRp8Qi--_sQjz

Is radiation the asbestos of the 21st century?
https://stichtingehs.nl/?s=asbest

Mobile telephony – the unspoken danger
https://www.kla.tv/index.php?a=showlanguage&lang=nl&id=14139&category=gesundheit&date=2019-04-11

Transmitter radiation leads to physical complaints
https://www.youtube.com/watch?v=j-3Mtw8Ubel

A million Dutch people sick from radiation
https://www.youtube.com/watch?v=r-Jag_kTt5o

Telecom fraud, real-life experiment of unprecedented scale
https://www.youtube.com/watch?v=Nt_SfBaUjmk

Wargaming for profit – mobile radiation, cancer risks and industrial lobbying
https://rumble.com/v2vz3lg-war-gaming-for-profit-documentaryenglish-version.html

Local resistance to 5G is increasing
https://www.youtube.com/watch?app=desktop&v=6WIUZvEqFAY

5G. No one listens!
https://www.cafeweltschmerz.nl/videos/5g-niemand-luistert-jan-van-gils-met-rob-verboog-en-vera-verhagen/

The House of Representatives is asleep ... does nothing about 5G
https://www.youtube.com/watch?v=6cloMA2Yz6c

5G: end of privacy
https://www.cafeweltschmerz.nl/videos/5g-einde-van-de-privacy-karel-beckman-met-jan-van-gils-en-elze-van-hamelen/

5G is seriously risky radiation
https://www.youtube.com/watch?v=PJojSMh7jig

"Who rules the Smart City?"
https://www.blckbx.tv/tech-media/wie-regeert-de-smart-city-marleen-stikker

"5G for Crowd Control and not for fun", says EZK in the Chamber
https://www.blckbx.tv/tech-media/5g-voor-crowd-control-elze-van-hamelen

DNA damage by the 'Big Brother' system 5G
https://www.youtube.com/watch?v=Z9b1dccbtfE

Mobile communication expert: "5G leads to chromosome damage and cancer"
https://auf1.tv/nachrichten-auf1/mobilfunk-experte-laubscher-5g-fuehrt-zu-chromosomen-schaeden-und-krebs

Unheard News – episode about electrosensitivity
https://npo.nl/start/serie/ongehoord-nieuws/seizoen-3_2/ongehoord-nieuws_265/afspelen

Uncontrolled Irradiated - presentation by ir. Jolanda van den Berg
https://www.youtube.com/watch?v=hKeslapfPGQ

English videos

Testing for Cell Phone Radiation
https://www.youtube.com/watch?v=dkW3yNjzMmQ

An Invisible Threat | Are microwave radiation waves killing us?
https://www.youtube.com/watch?v=TP2sdCOr2II

Generation Zapped
https://www.youtube.com/watch?v=WU0C6hp0b8U

The secret inside your cellphone
https://www.youtube.com/watch?v=Wm69ik_Qdb8

The Digital Dilemma
https://www.youtube.com/watch?v=CGCnGJiMK0A

"5G is not safe" according to former Microsoft president Frank Clegg
https://www.youtube.com/watch?v=h4TdY344Now

5G: friend or foe?
https://www.youtube.com/watch?v=AA9zJKc3o88

5G, The Untold Story
https://www.youtube.com/watch?v=7-4NaHu9Eo4

Wireless wake-up call from Silicon Valley engineer Jeromy Johnson
https://www.youtube.com/watch?v=F0NEaPTu9oI

Senator Blumenthal (USA) discovers that no research at all has been done on the health effects of 5G and that no safety tests have taken place.
https://www.youtube.com/watch?v=ekNC0J3xx1w

Protect Your Pregnancy From Wireless Radiation The BabySafe Project
https://www.youtube.com/watch?v=rp3OATqXXR4

Collection pages videos
https://stralingsbewust.info/videos-algemeen/
https://stralingsbewust.info/videos/

Bees, trees, and biodiversity

Radiation risks: a look at the consequences for the ecosystem
https://www.stop5gnl.nl/blog/2020/12/19/stralingsrisicos-een-blik-op-de-gevolgen-voor-het-eco-systeem-video-21-min/

Presentation by biologist/ecologist about 5G
https://www.youtube.com/watch?v=DtBXuKRnf5E

The influence of radiation on bees, trees, and biodiversity
https://www.cafeweltschmerz.nl/videos/de-invloed-van-straling-op-de-natuur-jan-van-gils/

Hommeless – what's going on with the bees?
https://www.youtube.com/watch?v=QXyrolbWMVo

WEBSITES

Health effects of radiation

5G Is Not Okay – https://5gisnietoke.nl/
Stralingsbewust.info – https://stralingsbewust.info/
EMF Map NL – https://emfkaart.nl/
National Platform Radiation Risks
https://platformstralingsrisicos.nl/
Honest About Radiation – https://eerlijkoverstraling.nl/
Stop UMTS – https://www.stopumts.nl/
Stichting Stralingsbewust Zeist – https://stralingsbewustzeist.nl/
Reduce Electrosmog – https://www.verminder-electrosmog.nl/
Stop Overdose Radiation – https://sosstraling.nl/
Zeeland Platform Radiation Risks
zeeuwsplatformstralingsrisico.nl/
Limit the Radiation – https://www.beperkdestraling.org/
Stralingsleed – https://stralingsleed.nl/
Low-Radiation Flanders
https://www.stralingsarmvlaanderen.be/
European Citizens' Initiative Sign Stop 5G –
https://signstop5g.eu/nl
Diagnose:funk – https://www.diagnose-funk.org/
Europeans for Safe Connections – https://esc-info.eu/en/
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